TRANSACTIONS

OF THE

OTOLOGICAL SOCIETY

VOL. VIII

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TRANSACTIONS

OF THE

OTOLOGICAL SOCIETY

OF THE

UNITED KINGDOM

VOLUME THE EIGHTH

COMPRISING THE REPORT OF THE PROCEEDINGS FOR THE EIGHTH SESSION, 1906–1907

Edited by Jobson Horne, M.D.

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PAST PRESIDENTS

1899–1901. Sir William Dalby.

1901–1903. Urban Pritchard.

1903–1905. Thomas Barr.

1905–1907. Alphonso Elkin Cumberbatch.

THE OTOLOGICAL SOCIETY
OF THE UNITED KINGDOM

OFFICERS AND COUNCIL

ELECTED DECEMBER 3, 1906

President

ALPHONSO ELKIN CUMBERBATCH

Vice-Presidents	ARTHUR HENRY CHEATLE JOHN MIDDLEMASS HUNT ADAM BROWN KELLY RICHARD LAKE
Hon. Treasurer	EDWARD LAW
Hon. Secretaries	HENRY SECKER WALKER ERNEST BLECHYNDEN WAGGETT
Hon. Editor of the "Transactions"	WALTER JOBSON HORNE
Hon. Librarian	LAURIE ASHER LAWRENCE
Other Members of Council	FREDERICK WILLIAM BENNETT CHARLES HERBERT FAGGE JOSEPH NELSON WILLIAM PERMEWAN HUNTER FINLAY TOD

THE ABOVE FORM THE COUNCIL

PATHOLOGICAL COMMITTEE

REFEREES

FREDERICK W. ANDREWES
SAMUEL G. SHATTOCK

ARTHUR HENRY CHEATLE
CHARLES HERBERT FAGGE
WALTER JOBSON HORNE
VITRUVIUS HAROLD WYATT WINGRAVE

LIST OF MEMBERS OF THE SOCIETY

JULY, 1907

Honorary Member.

Professor ADAM POLITZER, Vienna.

EXPLANATION OF ABBREVIATIONS.

P = President.	*L* = Honorary Librarian.
VP = Vice-President.	*C* = Councillor.
T = Honorary Treasurer.	*S* = Honorary Secretary.
Italics = Original Members.	*E* = Honorary Editor of the "Transactions."

The abbreviations placed after a Member's name indicate offices which have been held by him.

N.B.—Members are reminded that they are, themselves, responsible for the correctness of the descriptions in the following lists, and it is particularly requested that any change of title, appointment, or residence, may be communicated to the Senior Secretary before July 1 in each year.

ABERCROMBIE, PETER HENDERSON, M.D.(Glasg.), 56 Harley St., W. Assistant Surgeon to the Central London Throat, Nose, and Ear Hospital. *Elected December* 2, 1901.

ADAM, JAMES, M.D.(Glasg.), Lynview, Hamilton. Assistant Aurist, Glasgow Royal Infirmary. *Elected May* 4, 1907.

ADAMS, FREDERICK VASEY, F.F.P.S.(Glasg.), 10 Queen's Crescent, Glasgow. Assistant Surgeon to the Glasgow Ear Hospital. *Elected March* 3, 1902.

Baber, Edward Cresswell, M.B., 46 Brunswick Square, Brighton, and 62 Brook St., W. Surgeon to the Brighton, Hove, and Sussex Throat and Ear Hospital. *L. VP.*

Ball, James Barry, M.D., 12 Upper Wimpole St., W. Physician to the Throat, Nose, and Ear Department, West London Hospital.

Ballance, Charles Alfred, M.B., M.S., F.R.C.S., 106 Harley St. Late Aural Surgeon to St. Thomas's Hospital. *S. C. VP.*

Ballance, Hamilton Ashley, M.D., M.S., F.R.C.S., 46 Prince of Wales Rd., Norwich.

Barr, John Stoddart, M.B., Ch.B.(Glasg.), 13 Woodside Place, Charing Cross, Glasgow. Assistant Surgeon to the Glasgow Hospital for Diseases of the Ear. *Elected February* 5, 1906.

Barr, Thomas, M.D.(Glasg.), 13 Woodside Place, Charing Cross, Glasgow. Senior Surgeon to the Glasgow Hospital for Diseases of the Ear; Lecturer on Aural Surgery to the University of Glasgow. *VP. P. C.*

C *Bennett, Frederick William,* M.D., 25 London Rd., Leicester. Surgeon to the Ear and Throat Department, Leicester Infirmary.

Benson, Arthur Henry, M.A., M.B.(Dub.), F.R.C.S.I., 42 Fitzwilliam Square, Dublin. Ophthalmic and Aural Surgeon to the City of Dublin Hospital.

Birkett, H. S., M.D.(Ontario and Edin.), 132 Harley St., Montreal. *Elected May* 4, 1907.

Bond, James William, M.D., B.S., 26 Harley St., W. Physician to the Hospital for Diseases of the Throat, Golden Square.

Booth, James Mackenzie, M.D., C.M.(Aberd.), 1 Carden Place, Aberdeen. Ear and Throat Department, General Dispensary, Aberdeen. *Elected February* 4, 1907.

Bowen, William Henry, M.S.(Lond.), F.R.C.S., 60 Harley St., W. Assistant Surgeon, Royal Ear Hospital. *Elected February* 6, 1905.

Bronner, Adolph, M.D.(Heidelb.), 33 Manor Rd., Bradford, Yorks. Surgeon to the Bradford Eye and Ear Hospital. *C. VP.*

Browne, John Walton, B.A., M.D., 10 College Square North, Belfast.

Bull, William Charles, B.A., M.B., F.R.C.S., 5 Clarges St., Mayfair, W. Aural Surgeon and Lecturer on Aural Surgery to St. George's Hospital.

Carson, Herbert William, F.R.C.S., 26 Welbeck St., W. Surgeon in charge Throat and Ear Department, Tottenham Hospital. *Elected December* 1, 1902.

Cathcart, George Clark, M.A., M.B., C.M.(Ed.), 35 Harley St., W. Assistant Surgeon to the London Throat Hospital. *Elected December* 3, 1900.

VP *Cheatle, Arthur Henry,* F.R.C.S., 18 Savile Row, W. Aural Surgeon to King's College Hospital; Aural Surgeon, King Edward VII Hospital for Officers; Hunterian Professor, Royal College of Surgeons, 1906. *S. E. C.*

Cocke, Robert Sturgeon, M.R.C.S., L.R.C.P., 84 Harley St., W. Assistant Surgeon, Royal Ear Hospital. *Elected February* 6, 1905.

Connal, James Galbraith, M.B., C.M., F.F.P.S.(Glasg.), 4 Burnbank Terrace, Glasgow. Lecturer on Aural Surgery to Anderson's College Medical School; Surgeon to the Throat and Nose Department, Central Dispensary, Glasgow; Assistant Surgeon to the Glasgow Ear Hospital. *Elected May* 2, 1903.

P *Cumberbatch, Alphonso Elkin,* M.B., F.R.C.S., 11 Park Crescent, Portland Place, W. Aural Surgeon to St. Bartholomew's Hospital and National Hospital for the Paralysed and Epileptic, Queen Square. *T. VP.*

Cunningham, Herbert Hugh Blair, F.R.C.S.(Ireland), 69 University Road, Belfast. Ophthalmic and Aural Surgeon, Ulster Hospital for Women and Children, Belfast. *Elected February* 4, 1907.

Dalby, Sir William Bartlett, B.A., M.B., F.R.C.S., 18 Savile Row, W. Consulting Aural Surgeon to St. George's Hospital. *P. C.*

Davis, Henry John, M.A., M.B., B.C.Cantab., M.R.C.P.Lond., 8 Portman Street, W. Aural Surgeon to the West London Hospital. *Elected February* 5, 1906.

Deanesly, Edward, M.D., F.R.C.S., 4 Waterloo Rd., Wolverhampton. Aural Surgeon to the General Hospital, Wolverhampton. *Elected March* 3, 1902.

Donelan, James, M.B., M.Ch.(R.U.I.), 6 Manchester Square, W. Physiologist, Laryngologist, and Aurist to the Italian Hospital. *Elected February* 2, 1903.

C Fagge, Charles Herbert, M.B., M.S., F.R.C.S., 3 Devonshire Place, W. Aural Surgeon to Guy's Hospital. *Elected March* 5, 1900.

Farquharson, John Malcolm, M.B., C.M., F.R.C.P.(Ed.), 2 Coates Pl., Edinburgh. Surgeon to the Edinburgh Ear, Nose and Throat Infirmary; Lecturer on Diseases of the Ear, Nose and Throat, School of Medicine of the Royal Colleges, Edinburgh. *Elected December* 2, 1901.

Field, George P., 152 Harley St., W. Consulting Aural Surgeon to St. Mary's Hospital. *VP.*

FULLERTON, ROBERT, M.D., M.C.(Ed.), 24 Newton Place, Glasgow. Honorary Consulting Surgeon for Diseases of the Throat, Nose and Ear, Greenock Infirmary; Surgeon to the Throat, Nose and Ear Department, Greenock Eye Infirmary. *Elected March* 4, 1901.

Grant, J. Dundas, M.A., M.D., F.R.C.S., 18 Cavendish Square, W. Surgeon to the Central London Throat and Ear Hospital, and Throat and Ear Department West End Hospital for Nervous Diseases. *C.*

GRAY, ALBERT ALEXANDER, M.D., F.F.P.S.(Glasg.), 14 Newton Terrace, Glasgow. Aural Surgeon to the Glasgow Central Dispensary. *Elected February* 3, 1901.

GORDON, ALEC KNYVETT, M.A., M.B., B.C.Cantab. Fever Hospital, Monsall, Manchester. *Elected February* 5, 1906.

Guild, George Taylor, M.B., C.M.(Ed.), 164 Nethergate, Dundee. Surgeon to the Ear and Throat Department, Dundee Royal Infirmary; Lecturer on Diseases of the Ear and Throat to the University of St. Andrews.

Harvey, Frederick George, F.R.C.S.Ed., 89 Harley St., W.

HEATH, CHARLES J., F.R.C.S., 3 Cavendish Place, W. Surgeon to the Hospital for Diseases of the Throat, Golden Square. *Elected March* 4, 1901.

Hill, George William, B.Sc., M.D., 28 Weymouth St., W. Aural Surgeon to St. Mary's Hospital.

E *Horne, Walter Jobson,* M.A., M.D., B.C.(Cantab.), M.R.C.P., 23 Weymouth Street, W. Surgeon to the Metropolitan Ear, Nose and Throat Hospital; in charge of Throat and Ear Department Farringdon General Dispensary. *S. E.*

Horsley, Sir Victor, F.R.S., 25 Cavendish Square, W. *C.*

Hovell, T. Mark, F.R.C.S.(Ed.), 105 Harley St., W. Consulting Aural Surgeon to the London Hospital. *C.*

VP *Hunt, John Middlemass,* M.B., C.M.(Glasg.), 55 Rodney St., Liverpool. Laryngologist to the Royal Infirmary, Liverpool.

HUTCHISON, ARTHUR JAFFRAY, M.B., C.M.(Glasg.), Assistant Surgeon, Brighton Throat and Ear Hospital, 84 Lansdowne Place, Brighton. *Elected March* 6, 1905.

JACKSON, GEORGE, F.R.C.S.(Eng.), 19 Portland Villas, Plymouth. Senior Surgeon to the Devon and Cornwall Ear and Throat Hospital. *Elected February* 1, 1904.

Jakins, Percy, M.D.(Dur.), 120 Harley St., W. Surgeon to the Central London Throat and Ear Hospital.

JONES, BERTRAM SEYMOUR, F.R.C.S., 51 Newhall St., Birmingham. Assistant Surgeon, Birmingham and Midland Ear, Nose, and Throat Hospital. *Elected June* 3, 1905.

Jones, Hugh Edward, 19 Rodney St., Liverpool. Surgeon to the Eye and Ear Infirmary, Liverpool; Ophthalmic and Aural Surgeon to the Royal Albert Edward Infirmary, Wigan. *C. S.*

Jones, Henry Macnaughton-, M.D., R.U.I., M.Ch., M.A.O. (Hon. Caus.), F.R.C.S.(I. and Ed.), 131 Harley St., W. Late Surgeon to the Eye, Ear and Throat Hospital, Cork.

VP *Kelly, Adam Brown,* B.Sc., M.B., C.M.(Glasg.), 26 Blythswood Square, Glasgow. Surgeon for Diseases of the Throat, Nose and Ear to the Victoria Infirmary and Bellahouston Dispensary.

KELSON, WILLIAM HENRY, M.D., F.R.C.S., 17 Cavendish Place, W. Assistant Surgeon to the London Throat Hospital. *Elected March* 3, 1902.

KERR, JAMES, M.A., M.D., D.P.H.(Cantab.), School Board Offices, Victoria Embankment. Late Surgeon to the Bradford Eye and Ear Hospital. *Elected February* 2, 1903.

VP *Lake, Richard,* F.R.C.S., 60 Harley St., W. Surgeon to the Royal Ear Hospital. *C. L.*

T *Law, Edward,* M.D., C.M.(Ed.), 8 Wimpole St., W. Surgeon to the London Throat Hospital. *C. VP.*

L *Lawrence, Laurie Asher,* F.R.C.S., 9 Upper Wimpole St., W. Surgeon in charge of Throat and Ear Department, Western General Dispensary. *C.*

LEE, CHARLES GEORGE, M.R.C.S., L.R.C.P., 11 Princes Avenue, Liverpool. Honorary Surgeon to the Liverpool Eye and Ear Hospital, Aural Surgeon to the Royal Southern Hospital. *Elected May* 2, 1903.

LEECH, JOSEPH WILLIAM, M.D., M.S., F.R.C.S.(Ed.), 12, Eldon Square, Newcastle-on-Tyne. Senior Surgeon, Newcastle Throat and Ear Hospital. *Elected February* 6, 1905.

LITTLE, ANDREW, M.B., C.M.(Aberd.), 114 Manningham Lane, Bradford. Surgeon to the Eye and Ear Hospital, Bradford. *Elected December* 1, 1902.

LODGE, SAMUEL, M.D.(Dur.), 25 Harrison Road, Halifax. Royal Infirmary, Halifax. *Elected February* 4, 1907.

Love, James Kerr, M.D.(Glasg.), Olrig, Newark Drive, Pollokshields, Glasgow. Aural Surgeon to the Royal Infirmary, Glasgow, Honorary Aurist to the Glasgow Institute for Deaf and Dumb, Lecturer on Aural Surgery, St. Mungo's College, Glasgow. *Elected February* 3, 1902.

McBride, Peter, M.D., F.R.S.(Ed.), 16 Chester St., Edinburgh. Consulting Surgeon Ear and Throat Department, Royal Infirmary, Edinburgh, late Lecturer on Diseases of the Ear, Nose, and Throat at the University of Edinburgh. *C. VP.*

McCall, Anthony, M.D.(Glasg)., Boscombe Court, Bournemouth. Surgeon to the Throat, Nose, and Ear Department Royal Boscombe and West Hants Hospital. *Elected December* 1, 1902.

Manning, Leslie Samuel, M.B., C.M.(Aberd.), Christchurch, New Zealand. Aural Surgeon to Christchurch Hospital. *Elected December* 2, 1901.

Marriage, Herbert James, M.B., B.S., F.R.C.S., 109 Harley St., W. Aural Surgeon to St. Thomas's Hospital. *Elected February* 6, 1905.

Masina, H. M., F.R.C.S., Grant Medical College, Bombay India. *Elected February* 3, 1902.

Milligan, William, M.D., C.M.(Aberd.), 12 St. John St., Deansgate, Manchester. Lecturer on Diseases of Ear at Owens College, Manchester, Honorary Surgeon to the Manchester Ear Hospital, Aural Surgeon to the Manchester Royal Infirmary. *S. C.*

Mole, Harold Frederick, F.R.C.S., 19 Mortimer Road, Clifton. Surgeon in charge of the Aural Department Bristol Royal Infirmary. *Elected February* 2, 1903.

Murison, Alexander Logan, M.R.C.S., L.R.C.P., 55a Welbeck St., W. Assistant Surgeon, Royal Ear Hospital. *Elected February* 6, 1905.

Murray, George, M.R.C.S., L.R.C.P., Queen Anne's Mansions, St. James's Park, S.W. *Elected December* 1, 1902.

C Nelson, Joseph, M.D., L.R.C.S.(R.U.I.), 20 Wellington Place, Belfast. Aural Surgeon to the Royal Victoria Hospital, Belfast. *Elected March* 7, 1904.

Nicoll, James Henderson, M.B., F.F.P.S.(Glasgow), 4 Woodside Place, Glasgow, Consulting Surgeon to the Glasgow Ear Hospital. *Elected March* 7, 1904.

NOURSE, WILLIAM JOHN CHICHELE, F.R.C.S.(Ed.), 20 Weymouth St., W. Surgeon to the Central London Throat and Ear Hospital. *Elected December* 2, 1901.

Paget, Stephen, F.R.C.S., 70 Harley St., W. Aural Surgeon to the Middlesex Hospital. *C.*

PARKER, CHARLES ARTHUR, F.R.C.S.(Ed.), 141 Harley St., W. Surgeon to the Throat Hospital, Golden Sq. *Elected February* 3, 1902.

PATERSON, DONALD ROSE, M.D.(Ed.), M.R.C.P.(Lond.), 15 St. Andrew's Crescent, Cardiff. *Elected March* 5, 1900.

Pegler, Louis Hemington, M.D.(Ed.), 58 Harley St., W. Surgeon to the Metropolitan Ear, Nose, and Throat Hospital.

C PERMEWAN, WILLIAM, M.D., F.R.C.S., 7 Rodney St., Liverpool. Surgeon to the Throat and Ear Department, Southport Infirmary. *Elected December* 3, 1900.

PETERS, EDWIN ARTHUR, M.D., B.C.(Cantab.), 52 Wimpole St., W. Surgeon to the Throat and Ear Department, Bolingbroke Hospital. *Elected December* 1, 1902.

PINDER, THOMAS HENRY, M.R.C.S., Alexandra Road, Manchester. Surgeon to the Manchester Ear Hospital. *Elected February* 2, 1903.

Pollard, Bilton, M.B., B.S., F.R.C.S., 24 Harley St., W. Late Surgeon in charge of Aural Department University College Hospital.

POTTER, EDWARD FURNISS, M.D.(Brux.), M.R.C.P.(Lond.), M.R.C.S., 49 Queen Anne St., W. Surgeon to the London Throat Hospital. *Elected December* 3, 1900.

POWELL, H. FITZGERALD, M.D., F.R.C.S.Edin., 5 Harley St., W. Surgeon to Golden Square Throat Hospital. *Elected February* 5, 1906.

Pritchard, Urban, M.D.(Ed.), F.R.C.S., 26 Wimpole St., W. Aural Surgeon to the King's College Hospital. Professor of Aural Surgery, King's College, Consulting Surgeon to the Royal Ear Hospital. *VP. P. C.*

Purves, William Laidlaw, M.D.(Ed.), 20 Stratford Place, W. Aural Surgeon to Guy's Hospital.

ROSE, FRANK ATHERLEY, M.B., B.C.(Cantab.), F.R.C.S.(Eng.), 3 Upper Wimpole St., W. Assistant Surgeon, The Throat Department, St. Bartholomew's Hospital, and to the Hospital for Diseases of the Throat, Golden Square, London. *Elected February* 4, 1907.

Sandford, Arthur W., M.D.(R.U.I.), 13 St. Patrick's Pl., Cork. Lecturer in Ophthalmology and Otology at Queen's College, Cork, Surgeon to the Cork Ophthalmic and Aural Hospital. *C. V.P.*

Scott, Sydney Richard, M.S., F.R.C.S., 46 Queen Anne St., W. Aural Surgeon, Evelina Hospital. *Elected February* 6, 1905.

Sharpe, Alexander, F.R.C.S.(Edin.), 32 Park Square, Leeds. Aural Department, Leeds Public Dispensary. *Elected May* 4, 1907.

Spicer, Frederick. M.D.(Dur.), 17 Wimpole St., W. Surgeon to the Metropolitan Ear, Nose, and Throat Hospital. *Elected March* 3, 1902.

Spicer, Scanes, M.D., B.Sc.(Lond.), 28 Welbeck St., W. Surgeon to the Throat Department and Lecturer on Diseases of the Throat at St. Mary's Hospital.

Steward, Edward Simmons, F.R.C.S., 10 Princes Square, Harrogate. Aural Surgeon to the Harrogate Infirmary. *Elected February* 5, 1906.

Stockdale, Ernest Malcolm, M.R.C.S., L.R.C.P., 67 Rodney St., Liverpool. Assistant Surgeon and Pathologist, Liverpool Eye and Ear Infirmary. *Elected May* 4, 1907.

Story, John B., M.B., B.Ch.(Dub.), F.R.C.S.I., 6 Merrion Square North, Dublin, Ireland. Honorary Oculist and Aurist to the Claremont Institute for Deaf and Dumb. *C. V.P.*

Syme, William Smith, M.D.(Ed.), 10 Indian St., Glasgow. Assistant Surgeon to the Glasgow Ear Hospital. *Elected February* 1, 1904.

Teale, Michael Aubrey, M.R.C.S., L.R.C.P., 38 Cookridge St., Leeds. Aural Surgeon, Leeds Public Dispensary. *Elected February* 6, 1905.

Thomson, StClair, M.D., M.R.C.P., F.R.C.S., 28 Queen Anne St., W. Physician for Diseases of the Throat to the King's College Hospital.

Thorne, Atwood, M.B.(Lond.), M.R.C.S., 148 Harley Street, W. Assistant Surgeon to the London Throat Hospital. *Elected December* 2, 1901.

Tilley, Herbert, M.D., F.R.C.S., 72 Harley St., W. Surgeon to the Ear and Throat Department, University College Hospital. *S. L.*

C Tod, Hunter Finlay, M.A., M.B., B.C.(Cantab.), F.R.C.S., 111 Harley Street, W. Aural Surgeon to the London Hospital, Surgeon Throat and Ear Department Paddington Green Children's Hospital. *Elected December* 1, 1902.

Turner, Arthur Logan, M.D., F.R.C.S.(Ed.), 27 Walker St., Edinburgh. Surgeon for diseases of the Throat and Ear Deaconess Hospital, Edinburgh, Surgeon to the Ear and Throat Department Royal Infirmary, Edinburgh. *C.*

S *Waggett, Ernest Blechynden,* M.A., M.B., B.C.(Cantab.), 45 Upper Brook St., W. Aural Surgeon to Charing Cross Hospital, Surgeon to the Throat and Ear Department Great Northern Central Hospital. *C.*

S *Walker, Henry Secker,* F.R.C.S., 45 Park Sq., Leeds. Senior Ophthalmologist and Aural Surgeon to the General Infirmary, Leeds, Lecturer on Ophthalmology and Otology at the Yorkshire College, Leeds. *C.*

Waterhouse, Herbert Furnival, M.D.(Ed.), F.R.C.S., 81 Wimpole St., W. Formerly Surgeon in charge of Aural Department Charing Cross Hospital. *Elected February* 3, 1902.

West, Charles Ernest, F.R.C.S., 132 Harley St., W. Chief Assistant, Ear Department, St. Bartholomew's Hospital. *Elected February* 6, 1905.

Westmacott, Frederick Hibbert, F.R.C.S., 8 St. John St., Manchester. Honorary Aural Surgeon to the Manchester Children's Hospital, Pendlebury. *Elected March* 4, 1901.

Whitehead, Arthur Longley, M.B., B.S.(Lond.), 31 Park Square, Leeds. Honorary Ophthalmic and Aural Surgeon to the General Infirmary, Leeds. *Elected December* 3, 1903. *C.*

Wilkinson, George, M.B., B.C.(Cantab.), F.R.C.S.(Eng.), 350 Glossop Road, Sheffield. Ear and Throat Department, Sheffield Royal Hospital. *Elected February* 4, 1907.

Williams, Patrick Watson, M.D., 1 Victoria Sq., Clifton, Bristol. Physician to the Throat Department Bristol Royal Infirmary, Honorary Physician to the Deaf and Dumb Institute.

Williams, Richard, M.R.C.S.(Eng.), L.R.C.P.(Edin.), L.F.P.S. (Glasg.), 82, Rodney St., Liverpool. Senior Surgeon, Liverpool Eye and Ear Infirmary. *Elected February* 6, 1905.

WINGRAVE, VITRUVIUS HAROLD WYATT, M.D.(Dur.), 14 Stratford Place, W. Physician to the Central London Throat and Ear Hospital. *Elected December* 2, 1901.

WOOD, CYRIL GEORGE RUSS, F.R.C.S., Hardwicke House, Shrewsbury. Surgeon to the Eye, Ear, and Throat Hospital, Shrewsbury. *Elected February* 2, 1903.

Woods, Robert Henry, B.A., M.D.(T.C.D.), 39 Merrion Sq. East, Dublin. Surgeon to the Throat, Nose, and Ear Department, Richmond, etc., Hospitals, Dublin. *VP.*

Yearsley, Percival Macleod, F.R.C.S., 31 Harley St., W. Surgeon to the Royal Ear Hospital. *C. S.*

RULES AND REGULATIONS.

I.—*Name of the Society.*

The Society shall be called "The Otological Society of the United Kingdom."

II.—*Objects of the Society.*

The objects of the Society shall be:

(*a*) The exhibition and demonstration of patients, models, drawings, and specimens (microscopical or otherwise), illustrating the Anatomy, Physiology, Pathology, and Therapeutics of the Ear.

(*b*) The reading of papers and the discussion of questions in Otology, previously approved by the Council.

(*c*) The investigation by Committees:

(i) Of matters of public importance relating to Otology.

(ii) Of new methods of investigation or treatment of the diseases of the ear.

III.—*Constitution of the Society.*

The Society shall consist of Ordinary and Honorary Members.

The Officers of the Society shall be elected from among the Ordinary Members, and shall consist of a President, not less than two, and not more than four, Vice-Presidents, a Treasurer, a Librarian, an Editor of the 'Transactions,' and two Secretaries, who, with six other Members, shall constitute the Council. At least one fourth of the Council shall consist of Members not resident in London.

IV.—*Election of Members.*

Candidates shall be proposed on a form provided for the purpose, and signed by at least three Members from personal knowledge, who shall state the grounds of their recommendation, which shall be, either

(*a*) Contributions to Otology.

(*b*) The charge of an Aural Clinic approved by the Council.

(*c*) Professional eminence.

The names of those proposed as new Members shall, in the first instance, be submitted to the Council, with whom the power shall rest of declining to allow the nomination to proceed.

The proposal paper shall be read at one ordinary meeting, and the ballot shall be taken at the next meeting.

No election shall take place unless ten Members vote; one black ball in five shall exclude.

V.—*Form of Admission by the Chairman.*

Members shall be admitted personally by the following form, after signing their names in the admission book, and thereby agreeing to abide by the rules of the Society, and paying their admission fee and first annual subscription.

Form of Admission.—"By the Authority and in the name of the Otological Society of the United Kingdom, I admit you a Member thereof."

VI.—*Honorary Members.*

The Council shall have the power of electing men of distinguished eminence in Otology as Honorary Members. The number of Honorary Members shall not exceed six.

VII.—*Expulsion of Members.*

The Council shall have the power of expelling from the Society any Member whose conduct or mode of practice is considered unworthy of the Society. Notice of the Council's intention to expel him shall be sent in writing to the address in the Society's books, and he may appeal to the Society, whose vote, under Rule 8, shall be final.

VIII.—*Appeal.*

A Member who appeals against the decision of the Council, under Rule 7, can be finally expelled only at a General Meeting especially called for that purpose, and of which a written notice shall have been sent to every Member at least fourteen days previously. At least twenty votes must be accorded, and four fifths shall carry the expulsion.

IX.—*Subscriptions.*

There shall be an Admission Fee of One Guinea.

The Annual Subscription shall be One Guinea, payable to the Treasurer in advance on the first day of December in each year, and, if not paid before the first day of the following March, notice thereof shall be posted to the Member, and if not paid within thirty days, he shall, *ipso facto,* cease to be a Member. The Council may, however, reinstate any defaulting Member upon such terms as it may think desirable.

X.—*The Election of Officers and Council.*

(*a*) All the Ordinary Members shall be summoned by letter to the Annual Meeting in December, notice being given a fortnight beforehand, and the hour of meeting being stated.

(*b*) The President, Vice-Presidents, Treasurer, Librarian, Editor, Secretaries, and Council shall be elected by ballot at each Annual Meeting, and shall commence their duties on the day following election.

(*c*) One third of the Ordinary Members of the Council shall be replaced in rotation at each Annual Meeting by an equal number of Ordinary Members chosen from the Society at large.

No more than two members on the staff of the same hospital in London shall sit on the Council at the same time.

Only one member of the Council resident out of London shall represent the same city at the same time.

No member of the Society, with the exception of the President, the Treasurer, and the Editor of 'Transactions,' shall serve for more than three consecutive years upon the Council.

(*d*) Balloting lists of the members recommended by the Council to fill the vacant offices shall be prepared by the Secretaries, and forwarded, together with the summons to the Annual Meeting, to every Ordinary Member of the Society.

(*e*) Two Scrutineers, appointed by the President at the commencement of the Annual Meeting, shall receive the balloting lists during the first hour, at the end of which they shall report the result to the meeting.

(*f*) In the event of equality of suffrage the President shall determine by lot.

(*g*) If a Member wishes to propose for ballot any candidate

for office other than those whose names stand upon the list recommended by the Council, the name of such candidate, duly proposed by one Member and seconded by two other Members, shall be sent to the Senior Secretary at least a week before the Annual General Meeting.

(*h*) The Council shall have the power of filling up any vacancies which may occur in any of the offices of the Society between one Annual Meeting and another.

XI.—*The President and Vice-Presidents.*

The President shall regulate all the proceedings of the Society and Council, state and put questions, interpret the application of the rules and regulations, and decide every doubtful point. He shall sign the minutes of General and Council Meetings.

In the absence of the President, one of the Vice-Presidents, Treasurer, or some Member chosen by the meeting, shall perform his duties. The President and Vice-Presidents shall not serve for more than two consecutive years.

Every third President shall, if practicable, be resident out of London.

XII.—*The Secretaries.*

There shall be a Senior and a Junior Secretary elected for each session. The Senior shall retire at the end of each session, and shall, if the Society approve, be succeeded by the Junior. The Secretaries shall have the management of the correspondence of the Society and Council. They shall attend meetings. They shall take minutes, which they shall read at the following meeting. They shall notify to new members their election. They shall have charge of, and keep a register of, all papers communicated.

One of the Secretaries shall, if practicable, be resident out of London.

XIII.—*The Treasurer.*

The Treasurer shall receive all moneys due to the Society, and make up all payments ordered by the Council, keeping an account of all such receipts and payments. He shall keep a printed receipt-book for subscriptions, and every receipt and cheque shall be signed by him. He shall submit to the Council a written Report

of the financial state of the Society, for presentation to the Annual General Meeting. All moneys shall be banked in the name of the Society. The Treasurer shall not hold office for more than five consecutive years.

XIV.—*The Librarian.*

The Librarian shall not hold office for more than five consecutive years.

XV.—*The Editor of the 'Transactions.'*

The Editor of the 'Transactions' shall not hold office for more than five consecutive years.

XVI.—*The Council.*

The Council shall have the management of the affairs of the Society. They shall meet as required during the session of the Society. Notice of the hour of meeting shall be transmitted by the Secretaries to each Member. Four shall form a quorum, and six shall form a quorum when the question of the expulsion of a Member has to be considered. The President, or any three Members, may call a special meeting.

They shall determine questions by vote, or by ballot if demanded, the Chairman having the casting vote. They shall call a special meeting or meetings after the close of the session to determine what communications and illustrations shall be published in the 'Transactions'; they shall make such regulations and issue such orders as shall appear to them conducive to the good government of the Society and to the proper management of its affairs, subject to the Rules of the Society. They shall appoint Investigating Committees as may be required.

XVII.—*The Society's Transactions.*

The Transactions of the Society, under the designation 'Transactions of the Otological Society of the United Kingdom,' shall be published in such manner as the Council may direct. The 'Transactions' shall be presented to all Members of the Society who have paid their annual subscription. No Member whose entrance fee or subscription is in arrear shall be presented with the

'Transactions.' The Council shall be empowered to present, in the name of the Society, copies of the 'Transactions' to such scientific bodies as they may think fit.

XVIII.—*Investigating Committees.*

The Council shall, as occasion demands, appoint Committees of Members of the Society, and, if desirable, one or more non-Members, for the purpose of investigating questions of importance in Otological science, and shall have authority to grant such sums of money as they may deem necessary for the expense of these investigations. The Reports of such Committees shall be presented to the Council to be dealt with as they may deem most advisable. Such Committees shall be called "Investigating Committees": they shall consist of not less than three Members. The Investigating Committees shall continue to act until they have reported on the subject referred to them, or been dissolved by the Council. Every Member who has acted on an Investigating Committee shall sign the final Report, or shall state in writing his reason for declining to do so.

The Report shall be first received and considered by the Council, which may be specially summoned for that purpose, and shall afterwards, with their sanction, be presented at an Ordinary Meeting of the Society.

The Council shall be informed by their Secretary of the retirement of any Member of an Investigating Committee, in which case the Council may at their discretion appoint another Member of the Society to fill the vacancy.

The Investigating Committees shall render to the Council an account of all money received by them for the purpose of their investigations.

The Council shall have the power to dissolve an Investigating Committee whenever they may deem it expedient.

XIX.—*Ordinary Meetings.*

(*a*) The Ordinary Meetings of the Society shall be held on the first Monday, or some other day selected by the Council, at 4.30 p.m., in December, February, March, and May, in London or elsewhere, as the Council may decide.

(*b*) Each Member of the Society shall have the privilege of

introducing a visitor at every Ordinary Meeting, on entering his visitor's name in the attendance-book; but no visitor shall be introduced more than twice in the same session.

(*c*) The business of the Society at the Ordinary Meetings shall be:

(i) The reading of papers and report of cases.

(ii) The demonstration of cases.

(iii) The exhibition and examination of specimens (microscopical or otherwise), drawings, instruments, models, methods of treatment, and the discussion of Otological subjects.

(*d*) At the Ordinary Meetings of the Society nothing relating to its laws or management shall be brought forward.

(*e*) At Ordinary Meetings ten Members shall form a quorum.

(*f*) Additional Ordinary Meetings shall be held if the Council think them necessary.

(*g*) Papers (which must be written in form fit for printing) shall not, as a rule, be of such length as to occupy more than fifteen minutes in delivery. An abstract of each communication, for publication in the Medical Journals, shall be given to the Secretaries before the end of the Meeting at which the communication is read.

(*h*) Members wishing to read papers previously approved by the Council, or show cases, specimens, etc., shall, if possible, give notice thereof to the Secretaries ten days before the meeting.

(*i*) All papers shall be handed to the Secretaries immediately after being read.

(*j*) In any discussion, each Member taking part shall write on a form provided for the purpose an abstract of his remarks, which shall be given to the Secretaries before the end of the meeting.

XX.—*The Annual General and Special Meetings.*

The Annual General Meeting of the Society, for the election of the officers and other Members of the Council, shall be held in December. All proposals to enact, alter, or repeal rules shall be proposed by the Council only at the Annual or Special Meeting of the Society, notice of all such proposals being transmitted to every Member, together with the summons to the Annual or Special Meeting. For the adoption of rules or changes so proposed, the votes of two thirds of the Members present must be in favour of the proposal.

Any Member of the Society may suggest to the Council alterations in the rules, by letter addressed to the Secretaries.

A Special General Meeting may be called at any time by the Council, or at the written request of any ten Members giving at least fourteen days' notice by letter to every Member of the Society resident in the United Kingdom, of the time of meeting and the business upon which it is summoned, and no business shall be entered upon at such meeting except that which has been notified.

XXI.—*Library Regulations.*

(*a*) The Library shall be open at the same hours as that of the Medical Society—viz., from 1 p.m. to 6 p.m. daily, except on Saturdays, when it will be closed at 3 p.m.

(*b*) Members may obtain books at 11, Chandos Street between those hours on signing a book provided for that purpose. But any books or periodicals may be placed by the Council on a separate list, such books not being allowed to be removed from the Library.

(*c*) A book must be returned at the expiration of a fortnight if wanted by any other Member. The Librarian will in such a case write to the Member in whose name the book was taken out.

(*d*) If the book be not returned within four days of such notice, a fine of 6d. will be charged for each day that the book is retained beyond such days of grace.

(*e*) Members resident in the country can obtain books by writing to the resident Librarian and transmitting the cost of postage. Such books are sent at the borrower's risk.

(*f*) A Member taking out a book will be held responsible for its being returned in good condition.

ANNUAL REPORT OF COUNCIL.

1905—1906.

PRESENTED AT THE ANNUAL MEETING, DECEMBER 3, 1906.

In addition to the Annual General Meeting four Ordinary Meetings have been held in London and one in Leeds. At all the former the attendance has been excellent, but the number of members present at the Leeds meeting was below the average, only four Metropolitan members appearing. This, considering the excellence of the programme and the cordial welcome offered by the Leeds members, is a matter for much regret. The thanks of the Council are due to Messrs. Secker Walker, Whitehead, and Teale, who worked so hard to make the meeting a success.

The new regulations relating to the manner of making communications adopted last session and printed upon the card of meetings have been found impracticable, and they have therefore been abandoned.

The membership of the Society now numbers 105. During the past session five new members have been elected. The Society sincerely regrets the loss of three prominent original members: William Robert Henry Stewart, who died this year after a tedious illness; Arthur Marmaduke Sheild and Robert Mackenzie Johnston, who have resigned on account of ill-health.

The presentation to the Council of an *interim* report by the Honorary Editor of the *Transactions* led to the appointment of a sub-committee to consider the whole publishing arrangements. Certain recommendations were agreed to, and upon some of these the Council will act in the future.

Since 1901 sixty-three bound copies of past volumes of the *Transactions* have been sold, and it has been decided by the Council that members shall be afforded the opportunity of purchas-

ing from the publishers the volumes of the *Transactions* published prior to the date of their election at half the usual cost.

The Council has decided to recommend to the Annual General Meeting an alteration of Rule IX relating to the payment of subscriptions.

The question of the union of the medical societies has from time to time occupied the attention of the Council during the session, and the Society's representative, Dr. Urban Pritchard, has watched its interests at the various meetings of the Amalgamation Committee. Dr. Urban Pritchard has been asked to continue his services upon a new committee, and it is expected that the matter will shortly come before the Society for its final decision. The Council has held five ordinary and one special meeting, the attendance of individuals being as follows: Mr. Cumberbatch, 6; Mr. Ballance, 2; Mr. Lawrence, 6; Dr. Law, 5; Dr. Jobson Horne, 6; Mr. Yearsley, 6; Mr. Walker, 5; Dr. Barr, 1; Mr. Fagge, 2; Dr. Bronner, 2; Dr. Permewan, 1; Mr. Lake, 3; Messrs. Turner, Bennett, and Woods, 0.

Hon. Treasurer's Report for the Session 1905–1906.

The Society numbered 105 Members for the Session 1905–1906, all of whom have paid their entrance fees and subscriptions. One Colonial member compounded for life-membership by the payment of seven guineas (£7 7*s.*).

During the Session five new Members have been elected, while the Society has to regret two resignations through ill-health and the loss of two Members through death. The receipts for the year, inclusive of a balance of £86 3*s.* 10*d.* from last year, amount to £228 0*s.* 1*d.*, as compared with £207 10*s.* 10*d.* last year, being an apparent increase of £20 9*s.* 3*d.* Unfortunately, this is a fictitious increase, and there is a decrease of £5 17*s.* if the unusual receipts of a life-membership and the sales of *Transactions* and museum catalogues be deducted.

The expenditure to date is £133 1*s.* 11*d.*, as compared with £121 7*s.* last year, being an increase of £11 14*s.* 11*d.*, and leaving a balance in hand of £94 18*s.* 2*d.*

The present bank balance should about meet the outstanding liabilities of the Society for the past year, which, as far as I am aware, consist of the cost of the *Transactions*, miscellaneous printing, and the rent of the rooms.

The above financial statement is, in my opinion, far from satis-

factory for such an important Society as the "Otological Society of the United Kingdom," and I would like to suggest that steps be taken to lessen our expenditure, which this year exceeded our legitimate income by over £18, and to substantially increase our funds so that monetary assistance might be granted to research, museum, or other useful work.

SESSION 1905–1906.

RECEIPTS.

	£	s.	d.
Balance from last year	86	3	10
104 annual subscriptions	109	4	0
Entrance fees from 5 new members	5	5	0
One life composition fee	7	7	0
One subscription paid twice (in error)	1	1	0
Sale of *Transactions*	18	4	3
Sale of museum catalogue	0	15	0
	£228	0	1

EXPENDITURE.

	£	s.	d.	£	s.	d.
Rent of rooms	12	12	0			
One subscription paid in error (returned)	1	1	0			
Amalgamation of societies	1	18	9			
Indexing, etc., two volumes	2	16	6			
Miscellaneous printing	23	10	3			
Publishing *Transactions*	64	4	1			
Reports of *Proceedings* in fasciculus form	12	17	0			
Reporting 4 meetings	6	8	3			
Transcript of proceedings, Leeds meeting	5	2	1			
Postage and sundries	2	12	0			
				133	1	11
Balance at bank				94	18	2
				£228	0	1

REPORT OF THE HONORARY EDITOR OF THE "TRANSACTIONS OF THE OTOLOGICAL SOCIETY."

VOLUME VII of the *Transactions*, comprising the Proceedings of the Society during the session 1905–1906, has been published and issued to the members.

The Council has appointed a Committee of Referees consisting of the President, the Editor of the *Transactions*, and the London Secretary to report upon papers submitted under Rule XIX.

In May last the Editor presented to the Council an *interim* report dealing with the cost of production of the *Transactions*, and indicating how a saving could be effected without detriment to the Society or to the science. In that report he ventured to forecast a saving of upwards of 20 per cent. of the cost of the production of the volume just published. The total cost of printing, binding, and issuing this volume has been £47 2*s.* 7*d.*, which, compared

with £77 1*s.* 1*d.*, the cost of the previous volume, shows a saving of 40 per cent.

It is therefore satisfactory to be able to report that the utmost economy is being exercised in the matter of printing the *Transactions.*

Report of the Honorary Librarian.

The Honorary Librarian begs to report that there were only three members borrowing books from the library during the last half year. That there have been no new volumes presented, and only one member who is the author of a work on otology has presented a copy of his work to the library.

The exchanges have so far all come in.

(*Signed*) Richard Lake,
Honorary Librarian.

November 28, 1906.

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Fig. 2.—Right bone of a male, aged forty-four.

Plate II

Fig. 3.—Right bone of a male, aged forty-two.

Fig. 4.—Right adult bone.

Plate III

Fig. 5.—Right bone of a male, aged seven months.

Fig. 6.—Right adult bone.

TWENTY-EIGHTH ORDINARY MEETING.

Monday, December 3rd, 1906.

THE PRESIDENT, MR. A. E. CUMBERBATCH, IN THE CHAIR.

REPORT OF THE PATHOLOGICAL COMMITTEE.

The Pathological Committee of the Otological Society met on November 12, to examine and report on the following microscopical specimens:

(1) Mr. YEARSLEY'S "Ulcer of the Auricle," *vide Transactions,* vol. vii, p. 17.

(2) Mr. H. E. JONES' "Tumour of the Pinna," *vide Transactions,* vol. vii, p. 50.

REPORT.

(1) The bulk of evidence is in favour of this being an epithelioma, but no mitoses are to be seen, which if present would confirm this opinion.

(2) Is an angeioma, consisting of both blood- and lymph-vessels.

ARTHUR H. CHEATLE.
WYATT WINGRAVE.
C. H. FAGGE.

The following communications were made:

LANTERN DEMONSTRATION ON THE DISTRIBUTION OF PIGMENT IN THE LABYRINTH OF VERTEBRATES.

BY ALBERT A. GRAY.

Slides were shown illustrating the distribution of pigment in mammalia, birds, reptiles, and amphibia.

The PRESIDENT thanked Dr. Gray for his demonstration, and

asked him whether he had any theory as to the significance of that pigmentation.

Dr. Gray, in reply, said he had thought a good deal about the matter, but had been unable to solve the problem to his satisfaction. He could not see any reason for supposing that pigment was necessary in the labyrinth. He believed it to be a remnant from the dura mater, which was found in the fish. It was found in fishes, and he could only suppose it had come in along with the dura mater in the formation of the labyrinth. In birds it had obviously done so, and he regarded it as really a vestigial remain. He did not know about its distribution in invertebrates.

Malignant Disease of the External Meatus.

By R. Lake and W. H. Bowen.

The patient, a woman, aged twenty-eight, had a growth scraped out of her left external meatus a few months before being seen in January, 1906. At that time there was a pink infiltration of the concha spreading half an inch out from the edge of the external meatus. The auricle was protruding and fixed and the meatus occluded.

The ear was dissected off by an incision commencing between the tragus and crest of the helix, following the external curve of the helix until the upper junction of the auricle was reached and there it was continued into the usual mastoid incision.

The growth was shelled out, the cartilage of the concha being severed well free of the growth. As a good deal of thickening remained, the patient was X rayed by Dr. Chisholme Williams, and the swelling then disappeared. There is still occasional suppuration down the small channel representing the external meatus.

Mr. Bowen said that the specimen on histological examination proved to be carcinoma of the ceruminous glands. It showed acini, atypical in character, many containing several layers of cells and at places irregular columns of cells dipping down into the deeper layers of the connective tissue.

Extensive Cholesteatoma of the Mastoid.

By R. Lake.

The patient, a deaf mute of some thirty years of age, was brought to hospital last February obviously very ill, but no history

beyond the facts of a long-standing chronic suppuration of the left ear, and for a short time pain about the ear was to be elicited. There was pain on pressure over the left part of the mastoid process posteriorly. The patient refused emphatically to come in, although his state was obviously one of imminent danger, so he was dismissed.

The following week he reappeared with a history of several rigors. He was forthwith admitted and operated on immediately. The cholesteatomatous mass in the bottle was removed, and the sinus was apparently obliterated, but on stitching it up fluid blood was easily obtained from below, and after removal of some clot, also from above.

The patient rallied well, but rapidly became worse again, and died of septic pneumonia under forty-eight hours from the time of admission. The specimen in the jar shows the enormous absorption of the petrous. Only a shell of bone is left and the internal ear is also absorbed.

Acute Suppurative Otitis Media, with Grave Cerebral Symptoms —a Complication of Influenza.

By Herbert Tilley.

F. G——, aged eighteen, was admitted to hospital on July 23, 1906, with the following history of her illness:

On June 4 she had an attack of influenza, and in the course of a few days this was complicated by acute inflammation in, and discharge from, the right ear. The general symptoms of influenza passed off in about a fortnight, but the ear symptoms continued, and the pain, which was severe, spread over the right temporal region to the top of the head. She had one rigor during the early days of her illness, but the exact date of this in relation to the ear symptoms cannot be ascertained. For fourteen days previous to admission the temperature rose every evening to between 103° and 104° F., and fell in the morning to about normal or subnormal. Her strength was failing and she was becoming weaker.

State on admission to hospital.—Patient is listless, very pale, and has been suffering from headache, vomiting, and giddiness. Headache is more or less general, but is more severe at night in the right temporal region. Optic neuritis is well marked on the right side and some slight commencing neuritis on the left. Right pupil reacts sluggishly to light and is dilated. No ocular paralysis and no nystagmus. No weakness of the facial muscles.

A fœtid discharge issues from the right ear, and the tympanic membrane is perforated in the upper posterior quadrant. Watch not heard on contact. No redness or œdema was present on the right mastoid, but this process was very painful on deep pressure; there was no pain on pressure on the right temporal region.

Grip of left hand considerably weaker than right. No ataxy. Sensation normal and limb reflexes good. Left lower oblique abdominal reflex is very hard to obtain, whilst the right was easily exhibited. Patient is very listless, but answers to questions with intelligence. Temperature on admission, 98° F.; pulse, 84; respiration, 20.

Operation.—The mastoid antrum was freely opened, and it contained pus. A small suppurating track led backwards to the upper end of the lateral sinus, the groove of which was exposed and found to be healthy, except for a small granular patch overlying the termination of the track already referred to. The roof of the tympanum was carefully explored, but it seemed quite healthy. The temporo-sphenoidal lobe was exposed through an opening $2\frac{1}{2}$ in. × 1 in. The dura bulged into the wound, and still more so did the brain when the dura was incised and turned upwards in the bone wound. The temporo-sphenoidal lobe was explored in five directions with a long bistoury, and no pus was found, but about two drachms of pale straw-coloured fluid escaped when that part of the lobe was punctured which lies above the roof of the tympanum.

The dura was replaced and the skin wounds entirely sutured except at the lower end of the mastoid incision, through which opening a drainage-tube was passed upwards to the bone wound over the temporo-sphenoidal lobe. The patient made a very speedy and uneventful recovery.

Presumably the case was one of serous meningitis, and might have recovered if nothing had been done. This seems a reasonable prognosis when it is noted that the temperature, pulse, and respiration had been practically normal for forty-eight hours preceding the operation. On the other hand, the clinical aspects of the case were not so favourable. The patient looked desperately ill, and the combination of headache, sickness, and optic neuritis, ushered in by a rigor of influenzal origin, led me to decide upon operation.

Lumbar puncture might have given us much information, but the patient was sent in overnight as an urgency case. I operated next day at 2 o'clock, a day before leaving for my summer vacation.

Influenzal Otitis Media with Grave Symptoms; Operation; Recovery.

By Macleod Yearsley.

Mrs. R——, aged forty-two, a patient upon whom I had performed the radical mastoid operation on the left ear in January, 1905. History of influenza six weeks before consultation; this was accompanied by sudden otorrhagia on the right side, which woke her from her sleep. From that time there was slight fœtid discharge, scanty in amount and variable in presence, with occasional pain and deafness. This was treated by syringing with perchloride solution. On July 7 the pain became worse, radiating down the side of the neck and to the occipital region. There was frontal headache and general vertigo. The patient complained that the left side was weak and numb. I first saw her on July 13. Her temperature was 97° F., pulse 90, distinctly cerebral in character. Respirations 28. No vomiting or nystagmus. No optic neuritis. Left grasp weak, no ataxy, sensation good, reflexes of lower limbs good. Cerebration good. Hearing for acoumeter *nil*. The right membrane was bulging in its superior-posterior quadrant, there was slight fœtid discharge, and there was tenderness over the mastoid on deep pressure.

As the patient showed that pinched, anxious look that so often goes with serious acute mastoid trouble, I decided to operate at once, and at 2 p.m. explored the right antrum. There was no pus but several foci of carious bone were found and scraped. On exposing the sinus, the walls were found healthy and the contained blood was fluid. By removal of the antro-tympanic roof the dura mater was exposed and found to be bulging and not pulsating. On incision a little straw-coloured fluid escaped. Exploration of the temporo-sphenoidal lobe yielded nothing. The wound in the dura was closed, the mastoid wound was packed and partly sutured. Immediate improvement took place and the patient made an uneventful and uninterrupted recovery. The hearing on October 1 for the acoumeter was 10 feet.

Dr. Kerr Love said the readers of the two communications were to be congratulated on the recovery of their patients. But both made the significant remark that the brain was opened without result, and both added that the patient might have got well without operation—meaning, presumably, without opening the

brain, because the mastoid operation seemed to have been necessary in both cases. In Dr. Tilley's case it was interesting to note that rigor occurred, and that the author thought the rigor had no relation to the condition. It seemed important to decide whether in such a case one should operate on the sinus or merely expose the sinus. He (Dr. Love) thought the indications in both those cases were for laying bare the sinus, which in both were found healthy, clearing out the mastoid, and awaiting the result. Both authors seemed to indicate that they would not open the brain in a similar case in the future.

Dr. W. Milligan said both cases exemplified well-marked phenomena in influenza—namely the acute pia arachnoid injection which took place in that disease. He very much doubted whether either case would have got better if it had not been operated upon. He believed the opening of the cranial cavity was the salvation of both the cases. Though no gross pathological change was found, he understood that in both patients there was an increase of intra-cranial pressure, and in Dr. Tilley's case there seemed little doubt that œdema of the brain was present with distension of the lateral ventricles. He thought the mere fact that a radical mastoid operation was done, and that a considerable amount of blood was drawn from the neighbourhood of the lesion was the reason the patient recovered. He believed that in influenza one of the chief factors which had to be dealt with clinically was that severe congestion of the pia arachnoid, and he believed that was the reason headache was so severe in influenza. Had Dr. Tilley done lumbar puncture in the first instance and drawn off cerebro-spinal fluid under tension, he probably would not have opened the intra-cranial cavity. That would have satisfied him at the moment that there was serous meningitis. He noted that, for various reasons, Dr. Tilley had been unable to do this, but it was an excellent thing to do in doubtful intra-cranial disease, afterwards examining the fluid both microscopically and bacteriologically.

Mr. C. H. Fagge said he could call to mind at least three cases of influenzal otitis with meningeal symptoms similar to those just recorded. He proposed only to mention one, which was closely allied to Dr. Tilley's case. The patient was a boy of fourteen, who was really ill with optic neuritis and paralysis of the external rectus of the same side. He carried out what he believed to be the correct procedure—namely the performance of a complete mastoid operation, exposing the dura in the middle and posterior fossæ, and finding there was no disease of the external aspect of

the dura mater in any relation to the tympanic or antral wall, he drained the cavity and left it. The case, which was probably one of serous meningitis, got perfectly well.

Mr. E. West asked whether there was any real evidence of the patients having had influenza, except history or tradition. Was any effort made to cultivate the organism?

Mr. Richard Lake said many cases of serous meningitis had been recorded which apparently got well, whether one did lumbar puncture, or an exploratory operation on the dura mater, or whether nothing operative was done. He could not help thinking that many of those cases of so-called meningitis which got well under the influence of mercury must very likely have been of the same class as those just narrated. If one was able to recognise the fact that there was serous meningitis, he did not think that anything more than lumbar puncture would be indicated.

Dr. J. Donelan said that lumbar puncture, if performed early, had a decided value in cases of meningeal infection, and this was the experience of most continental authorities. He had reported in the *British Medical Journal* last year a case of cerebro-spinal meningitis in which the fluid furnished the bacteriological proof, and in which immediate and permanent improvement had followed the operation. In Dr. Tilley's case there was obviously no opportunity for this. Last July he had a case in which the cerebral symptoms were very similar to those mentioned. The radical mastoid operation was performed and pus found in the antrum. The lateral sinus was extensively exposed and found healthy, so nothing more was done. The recovery was somewhat remarkable from the fact that the incision healed completely by first intention, and the patient, who had postponed marriage, was able to start on a honeymoon tour with an absolutely dry ear within four weeks of the operation. It was very difficult to place oneself in the position of other operators and to duly estimate their reasons, but he felt from the notes that had been read that in these cases they were entirely justified in the present state of aseptic surgery in doing what they had done and removing any doubts they may have felt that nothing was left behind.

Dr. Dundas Grant said he could support what had been said with regard to lumbar puncture, especially from a prognostic point of view. He had two cases under his care with meningitic symptoms. Both had strabismus, both had chronic suppuration. Lumbar puncture in one resulted in the withdrawal of quite clear fluid, though under considerable pressure. The fluid from the other deposited a precipitate in the test-tube like iodoform in

appearance. In the first case he found no pus in the antrum, but there was a considerable quantity in the groove for the lateral sinus. That was evacuated, the wound closed, and the patient got well. In the other case, in which the thecal fluid had a yellow deposit, he explored the brain, but found no pus. There was enormous bulging, and when the patient died it was found that meningitis had extended from the internal auditory meatus. Lumbar puncture helped in the prognosis, and it was doubtful whether, in view of the data in the second one, there ought to have been any operation at all. In any event he thought that what the authors had done was perfectly right, namely operating without delay for the exploration of the groove over the lateral sinus, and, at all events, trephining to find out whether there was extra-dural suppuration. Both produced such extreme symptoms, and were so essentially curable, that to omit to search was not excusable. Perhaps lumbar puncture might have relieved the pressure to the extent required.

Mr. Herbert Tilly, in reply, said he could not be positive it was an influenzal case, but in the doctor's letter which came to him —the patient came as an emergency one—influenza was said to be in the neighbourhood, and the patient had suffered for a fortnight from fever and general pains about her body. No cultivation was made of the material from the mastoid. If he had the same sort of case again, he might be content with a smaller operation; but the girl was extremely ill at the time of operation: there were sordes on her teeth, and there was optic neuritis and other symptoms mentioned. When he had entered the antrum and found comparatively little there, he felt prompted to go further. The lesson one learned from such cases was that, at least, they should be drained through the mastoid. If he had made any mistake it was to have drained too extensively, but perhaps it was preferable to do that than to leave the case imperfectly drained and thus run the risk of losing the patient.

Mr. Yearsley, in reply, said he could only give the same answer as Dr. Tilley had given. The history given to him by the general practitioner was that it was a case of influenza. No cultivations were taken from the carious foci. If he had another similar case, he would certainly perform lumbar puncture. But as the patient was so ill, and as he did not find sufficient in the antrum to account for the symptoms, he was constrained to go further. When he found that the dura mater showed signs of intra-cranial pressure, and that fluid came out when he opened it, he felt that he was on the right track.

A Case of an Abnormally Short External Auditory Canal.

By L. A. Lawrence.

The President said he looked at the case, but he did not detect much difference between the length of the patient's meatus and that of an ordinary one, though perhaps on one side it was a little shorter than on the other. Possibly this was an optical delusion, due to the prominence of the upper edge of the annulus tympanicus.

A Case of Septic Meningitis Secondary to Suppurative Labyrinthitis.

By W. Milligan.

The patient, a married woman, aged thirty-six, was admitted to hospital complaining of severe pain at the back of the head, nausea, and vertigo.

The history given was that the left ear had discharged for twenty years, following an attack of scarlet fever. Until within a fortnight of her admission to hospital there had been no pain in the head, but there had existed a continuous fœtid discharge from the ear for years.

Objective examination revealed a large perforation in the posterior segment of the membrane and a tuft of soft, vascular bone-granulations springing from the upper and posterior portion of the inner tympanic wall. The affected ear was quite deaf, and the tuning-fork tests were lateralised to the sound ear. There was marked facial paralysis. The subjective symptoms were pain in the ear and at the back of the head, tinnitus, vertigo, and nausea. On one occasion before admission to hospital she had been violently sick, and vomited.

The temperature on admission was 102·4° F., the pulse 112, and the respirations 20.

There was a history also of one rigor previous to admission. There was no definite optic neuritis, although the margins of both discs were somewhat ill-defined. There was marked horizontal nystagmus.

The symptoms and the various clinical indications pointed to implication of the left labyrinth. Under chloroform anæsthesia the usual radical mastoid operation was performed. Situated deeply within the substance of the petro-mastoid was a fairly large

cholesteatoma. After its removal the following appearances were noted: facial nerve exposed for a considerable distance in its descending portion, complete disappearance of stapes with its foot-plate, horizontal and superior semicircular canals opened up, probably by erosion of the cholesteatoma, oozing of pus in a small amount from the posterior part of the vestibular erosion.

The very collapsed condition of the patient and the fact that there was now a fair-sized opening from which pus in the labyrinth might escape, made it advisable to complete the operation as rapidly as possible.

The day after the operation the patient appeared somewhat better, but the following day the temperature began to rise and the pain in the head to return.

A lumbar puncture was performed and cloudy fluid withdrawn. Four days after the operation the patient died. The following condition was found at the autopsy:

Skull cap rather adherent to membranes and separated with some difficulty. Dura congested. Pia-arachnoid veins distended. Cerebro-spinal fluid increased in amount and turbid, mostly collected about base of brain. Convolutions of brain slightly flattened, with opaque deposit of lymph lying in the sulci. Lying on and adherent to base of brain, especially about pons and medulla, mass of blood-clot. Brain-substance injected, ventricles filled with cerebro-spinal fluid; also in the lateral ventricle of left side large firm blood-clot, showing complete form of lateral ventricle with body and cornua, extending anteriorly through foramen of Monro into third ventricle where also was a small clot, and on into lateral ventricle of right side where a clot only in the body of this structure was found; clot adherent in parts to choroid plexus, from which the hæmorrhage probably occurred.

No abscess in cerebrum or cerebellum. Structures entering internal auditory meatus swollen, sodden and greenish but no pus found here.

Mr. Fagge asked whether Dr. Milligan would present the specimen to the museum, and Dr. Milligan consented.

A Case of Primary Tuberculosis of the Left Mastoid Process.

By Hunter Tod.

P. L——, aged four, a French boy, was admitted to hospital two months ago with a large swelling behind the left ear. There

was a history of measles four months ago, followed by an abscess behind the left ear which burst. The swelling over the mastoid process had existed for six weeks. The boy is strong, chubby, and apparently very healthy. The following note was taken when the boy was admitted to the hospital:

"Situated over the left mastoid is a rounded swelling about the size of an orange; the auricle is pushed downwards and forwards, the swelling is elastic and of fairly uniform consistence, and gradually fades away into the surrounding tissue; the skin over the swelling is normal, except for two ulcerated surfaces each the size of a penny; the ulcerated surface is covered with exuberant granulations, and a small amount of yellowish discharge comes away from the surface. A probe can be passed through a small opening in the anterior ulcerated surface, but no bare bone can be felt; the mass is apparently fixed to the bone in the region of the mastoid. No fluctuation can be made out, and there is no pulsation. There are no enlarged glands in the neck on either side. There is a purulent discharge from the left ear, and the external meatus is narrow owing to the upper posterior wall being pushed downwards and forwards; some granulations can be seen, presumably coming from the middle ear." This tumour was seen by several of my colleagues, who considered it might be either a sarcoma or necrosis of bone the result of measles.

On October 23 an exploratory incision was made over the swelling, which was found to consist of soft granulation-tissue which could be scraped away. A piece of tissue was removed from the edge of one of the ulcerated surfaces for microscopic examination. After exposing the bone it was found to be eroded over an area involving all the mastoid process and extending above into the temporal region; there was no fistula leading into the antrum. A week later a complete post-aural operation was performed, and the tympanic cavity, the attic, the antrum, and the mastoid were found to be filled with soft and pale granulations and carious bone; both the dura mater and the lateral sinus were exposed, and the mastoid removed down to its very tip. The wound was left open. The clinical appearance of the bone suggested tuberculous disease. The microscopic section, examined two or three days later, showed presence of groups of round cells containing giant cells. Since the operation the wound has become rapidly filled with exuberant granulations, which have had to be curetted away. On November 27 the opsonic index for tubercle was taken, and found to be very low, namely 0·5.

Mr. Fagge said he did not think Mr. Tod's case could be accepted as one of tuberculosis. Mr. Tod had not said whether he examined the material for tubercle bacilli, or whether any were found. It was well known that the presence of giant cells was not more diagnostic of tuberculosis than of several other chronic inflammations. Surely the absence of glandular enlargement, the very slight bone-destruction, and the absence of facial paralysis in a young child were very much against the case being one of tubercle. He would have thought it was subacute or chronic infection of a septic character secondary to measles.

Dr. Milligan said he was inclined to agree with Mr. Fagge. He did not think Mr. Tod had proved his case. Certainly one would not accept the mere presence of giant cells as diagnostic of tubercle. As Mr. Tod said, the disease had not cleared up. He (Dr. Milligan) suggested that a scraping be taken from the fringe of the disease, and an inoculation experiment be performed. He believed that to be the only true method of diagnosing such cases. He agreed with Mr. Fagge that the absence of facial paralysis and of glandular enlargement made it very unlikely that the condition was tubercular. He had seldom seen cases of tubercle in young children without glandular enlargement. It was very difficult to discuss the case thoroughly, so he hoped that Mr. Tod would do an inoculation experiment and let the Society know the result. The case raised the whole question of primary tuberculous disease of the mastoid as against secondary infection. It was desirable to have some further information about the present case, and he hoped that it would be forthcoming later on.

Mr. Tod, in reply, said that he was well aware that in about 40 per cent. of cases of tuberculosis of the middle ear, facial paralysis was met with, especially in children, and, as a rule, the cervical glands were enlarged. This, of course, was common knowledge. The reason why he brought this case before the Society was because it was an unusual one. The condition of the mastoid bone and the character of the granulations found on performing the complete post-aural operation seemed typical of tuberculous disease, and quite unlike that following septic disease of the bone. Further, if the case were not tuberculous in origin, it was an extraordinary coincidence that not only the microscopic section showed giant cells, but also the opsonic index for tubercle was only 0·5. Mr. Tod said he would be pleased to do inoculation experiments and report the result to the Society.

A Case of exceptionally good Hearing after Removal of the Stapes.

By Hunter Tod.

M. W—, aged twenty-seven, a domestic servant, was first seen at hospital in February, 1905. She complained that she had suffered from deafness and otorrhœa of both ears for many years, and recently from tinnitus in both ears and occasional attacks of pain behind the right ear, accompanied by headache extending up the right side of the head. There was a large perforation of the membrana tympani on both sides. On the right side the malleus could not be seen, and a fistula extended anteriorly into the attic, and in the posterior upper quadrant were some granulations. On the left side there was a large perforation occupying the anterior upper quadrant, with some granulations in front of the malleus. The drum was normal posteriorly, although adherent to the inner wall of the tympanic cavity. On August 10 ossiculectomy was performed on the left ear; there was an uneventful recovery, the patient getting up on second day and feeling quite well. On August 31 a similar operation was performed on the right ear; the malleus was not found, but the incus was removed in the ordinary way. On curetting away the granulations from the upper posterior quadrant, the stapes came away with them. (Mr. Tod showed the malleus and incus removed from the left side, and also the incus and stapes removed from the right.) There was some slight sickness after the operation and giddiness on sitting up, but the patient was up and walking about after the fifth day. The discharge from the left ear ceased within three weeks after operation. Unfortunately, the hearing was not tested before and after these operations; the patient, however, is certain that the hearing was improved by them, although for a few days after the operation on the right ear she felt distinctly worse. On March 6, 1906, Mr. Tod performed the complete post-aural operation on the right side, as there were still attacks of pain in the head and some granulations to be seen in the region of the attic and aditus; the stitches were removed from the post-aural wound on the tenth day, and patient left the hospital on the twelfth day. The hearing is now excellent, as the following table will show:

		Right (stapes removed).	Left.
Watch		4 in.	3 in.
Whispering	words "44" and "4"	heard 8–10 ft.	heard 4–5 ft.
	" "66" and "99"	" 25 ft.	" 20–25 ft.

		Right (stapes removed).	Left.
Words	sister	heard 25 ft.	
	sailor		
	mistress		
"	robber	" 8–10 ft.	
	rug		
Conversation (ordinary voice)		25 ft.	20–25 ft.
Tuning-forks	C_4 air	normal	−6 secs.
	C air	−more than 60 secs.	
	bone	+2 secs.	
	Rinne	−marked	

This case is of interest in that it shows how exceedingly good hearing may be, in spite of the removal of the stapes, which, of course, in this case was removed by accident, and not on purpose. One can only presume that as a result of suppuration in the middle ear the stapes had already become partly dislodged from the fenestra ovalis, and that thin scar-tissue had already closed its opening; otherwise it is difficult to account for the almost complete absence of symptoms of labyrinthine irritation which one would have expected to occur as an immediate consequence of the operation or for the extraordinary hearing power which now exists.

The President said it was a difficult physiological question as to how a person heard after removal of the stapes. It illustrated the fact that much had yet to be learned as to how sound was conducted to the internal ear.

Case of Periodic Central Deafness; Death.

By Watson Williams.

On September 22 a lady, aged seventy, when apparently in excellent health and very active, suffered from supra-orbital and occipital headache, coming on suddenly, with a sense of faintness. Recovered, and on 27th went driving. Whilst returning she suddenly became apparently "stone deaf," but could hear again well before reaching home. The deafness returned once or twice the following day whilst packing. She took a railway journey and was deaf the greater part of the way, but had fairly recovered when she neared her journey's end. As several similar attacks occurred she was referred to Dr. Williams. She could only hear loud shouts close to her ears, and the tuning-fork was perceived by air- and bone-conduction only if very loud. In all other respects she was in apparent good health and very active. She was sent back to her attendant and advised to keep her bed for a week.

Becoming normal in all respects, she was allowed out for walks some days later, but on reaching home on October 14 she became unconscious. She recovered consciousness to some extent before death from cardiac and pulmonary conditions on October 19. No autopsy allowed.

Previous history.—Right hemiplegia associated with valvular heart disease six and a half years previously.

The President thanked Dr. Williams for the notes of the case, but the hour was too late to permit of a discussion on it.

TWENTY-NINTH ORDINARY MEETING.

Monday, February 4th, 1907.

The President, Mr. A. E. Cumberbatch, in the Chair.

The following communications were made :

Metallic Corrosion Casts of the Temporal Bone.

By H. F. Mole.

After trying several methods of making the casts, the following was found to give the most satisfactory results. A thoroughly macerated temporal bone is taken, and well dried in an incubator. The openings at the bottom of the carotid canal leading into the tympanum are enlarged with a fine needle, and a hole is also made into the Eustachian tube. The superior semicircular canal is then opened with a file. The internal and external auditory meatuses are closed with cigarette paper gummed over them, and all other visible openings, facial canal, etc., closed with putty. A small paper or cardboard funnel is then made, and gummed into the carotid canal at the apex of the petrous bone, the lateral opening having previously been closed with paper. The whole bone is covered over with plaster-of-Paris mixed to a good, thick consistence. The specimen must now be left to dry quietly for a few days. Nearly always some cracks will appear in the plaster, which will require filling up. The specimen is finally dried in the incubator at 50° C., placed with the funnel downwards. Before proceeding with the casting the plaster-enveloped specimen is buried in fine silver sand in a tin with no soldered joints, placed on a tripod over a Bunsen burner, and heated until the metal will just melt on the surface of the sand. The molten metal is then poured slowly into the funnel from an ordinary iron ladle. Whilst doing this the tin containing the specimen is gently knocked against the tripod to ensure the metal flowing through the bone. This must, however, be done *very* gently, otherwise the plaster will be cracked and the metal pour out of the bone into the sand. When the metal

ceases to fall in the funnel no more is poured in, and the specimen is allowed to cool. This takes a long time, and impatience will result in an imperfect cast being obtained. When cool, the plaster is chipped off, and any metal that may have escaped on to the surface of the bone (there nearly always is some) is removed. The bone now filled with metal is placed in a glass vessel containing 20 per cent. caustic potash, and put in an incubator at 50° C. The solution should be changed every few days, and in from three to four weeks the greater part of the bone will have been removed. The specimen is then placed in water for a day, and, finally, in a 1 in 6 solution of hydrochloric acid. This removes all the dense bone about the labyrinth, and in a few days the cast is complete. It is again placed in water, dried, and, finally, its various parts painted and varnished and the specimen then mounted. To obtain the lateral sinus one or two holes are bored from it into the mastoid process, and the sinus bridged over with strips of paper or linen before enveloping in plaster-of-Paris. The metal used is Wood's metal —an alloy of lead, tin, bismuth, and cadmium. The method adopted is that described by Siebenmann, with slight modifications.

Notes of a Fatal Case of Otitic Septic Thrombosis involving the Whole of the Right Lateral Sinus, the Occipital Sinus, and the Internal Jugular Vein, as far as the Innominate, Complicated by numerous Septic Infarctions in both Lungs and Hæmorrhagic Pleurisy of the Right Side.

By J. Stoddart Barr.

The patient, a married man, aged thirty, was admitted to the Glasgow Hospital for Diseases of the Ear, Nose, and Throat on December 1, 1905, complaining of a chronic discharge from his right ear associated with severe rigor and pain in the neck.

History.—He had had an offensive purulent discharge from the right ear for nine years. His present illness commenced three weeks ago with headache, chiefly right-sided, and at the same time the discharge greatly increased in quantity. A week afterwards pain began in the right ear, so severe that he was compelled to stop work and take to bed. Five days before admission he had the first rigor—a severe one—during which his teeth chattered and the bed shook. Since then rigors have been of daily occurrence, as many as three in the twenty-four hours, very severe in character, each lasting from fifteen to twenty minutes. On the day of the first rigor, a swelling, tender to touch, was noticed behind the

right mastoid region, and two days afterwards some fulness with tenderness of the right side of the neck was observed. The appetite for the past week had been bad, and there had been great thirst, also profuse sweating, while opening medicine had been necessary. A slight cough had been noticed for two or three days without, however, any pain in the chest or expectoration.

State on admission.—Patient looked very ill, being pale and wasted. His intelligence, however, was perfectly clear, his answers being ready and distinct. There was no headache, the tongue was furred, but the breath had no distinctive odour. The temperature was 104·2° F., pulse 124 per minute, and somewhat irregular; respirations 30 per minute, and of a sighing character. Ocular movements and pupillary reactions were normal. There was no evidence of optic neuritis. There was no facial paralysis. Nothing abnormal was found in the lungs or heart. Urine contained neither sugar nor albumen.

Condition of ear and neighbourhood.—There was a considerable offensive discharge from the right ear. The meatus was occupied by granulation-tissue, which obstructed the view of the deeper parts. There was distinct tenderness over the mastoid region, and about midway between the mastoid process and the external occipital protuberance there was a slight swelling, soft and tender to touch, and crepitating slightly on palpation. The right side of the neck, from the angle of the jaw to the clavicle, was very tender on pressure, and at the upper third was distinctly swollen, while in the lower two thirds a hard, cord-like swelling could be distinctly felt, along the course of the internal jugular vein. The upper third of the posterior cervical triangle was likewise painful on pressure. The left ear was normal.

With such symptoms, namely, repeated rigors and violent oscillations of temperature, with pain and cord-like swelling in the neck, with earache and headache, associated with chronic suppuration of the middle ear, the diagnosis of septic thrombosis of the sigmoid sinus and internal jugular vein was confidently made. The question of tying the latter as a preliminary step in the treatment was considered, but it was thought advisable, owing to the patient's general condition, at once to remove the real source of the mischief, especially, also, as the vein was almost certainly already obliterated by a thrombosis. Two hours after admission, therefore, the middle-ear cavities were cleared out, and the sigmoid sinus exposed.

The first operation.—The radical mastoid operation was performed,

and the antrum was found deeply placed, small in size, surrounded by sclerosed bone, and filled with granulation-tissue and pus. After careful curetting, bone was removed by chiselling in a backward direction towards the sigmoid sinus. When the sigmoid groove was reached some bubbles of gas and a quantity of brown, badly-smelling pus escaped, and the sinus, on being freely exposed, was found covered with pus. The sinus wall was soft, white, and sloughy, with several perforations, out of which exuded thick, brown, offensively-smelling matter. In an upward and backward direction I exposed the sinus to the extent of three inches, and found a large, thrombosed, emissary vein, which was traced downwards and outwards to its superficial origin in the soft parts corresponding to the swelling between the mastoid and external occipital protuberance already referred to. The swollen tissue was discoloured and sloughy, and infiltrated with dark-coloured pus, from which gas escaped. The exposed sinus was slit open throughout, and its contents consisted of broken-down thrombi, with dark brown pus, having an extremely fœtid odour. The sinus was still further exposed towards the torcular, and slit open until a gush of apparently healthy blood appeared, when it was plugged with iodoform gauze. In a downward direction, towards the jugular bulb, the bone was further removed, and the sinus slit open as far as possible, but brown pus continued to ooze up from below. Iodoform powder and gauze were freely applied over the cavities. Towards the end of the operation the patient's general condition became very alarming, and death seemed imminent, but under the hypodermic use of strychnine and digitalis, with an enema of whisky, the patient rallied.

On the day following the patient's condition had greatly improved, temperature being normal, pulse 88, and respiration 20. For forty-eight hours this improvement continued, when patient had another rigor, temperature mounting to 104° F., and pulse to 120.

Second operation.—It was now decided to operate at once upon the internal jugular, and, with the kind assistance of Dr. James H. Nicoll, I exposed the vein and found it firmly thrombosed as far as the clavicle, where it was ligatured as low down as possible, but, unfortunately, I could not get below the thrombosed portion. In an upward direction the vein was exposed as far as the level of the facial branch, where it was ligatured and excised between the two ligatures. At the upper part of the vein the contents were more fluid and semi-purulent. One deep mattress suture was

inserted at the middle part of the incision, and the usual iodoform dressings applied. This second operation was also followed by some improvement in the general condition. In six days after this operation the temperature fell to normal, and the pulse to under 90. Two days, however, after the second operation definite signs of lung involvement, with some pleuritic friction on the right side were discovered. There was likewise rusty expectoration, which gave cultures of staphylococci alone. The local condition was not satisfactory, and at every dressing the gauze was found soaked in brown offensive pus, which seemed to come mainly from the direction of the jugular bulb, but the posterior part of the sinus wound showed a healing tendency. After the signs of lung involvement became evident the condition of the patient became gradually worse, and death ensued eighteen days after the first operation.

Post-mortem Examination by Dr. James Walker, *Pathologist to the Hospital.*

Brain.—Œdema not pronounced; no abscess formation. *Meninges.*—No meningitis. *Cranial venous sinuses.*—The following veins were involved: (1) Occipital vein; (2) torcular Herophyli; (3) right lateral sinus; (4) right jugular bulb. All four contained soft, purulent thrombi. The veins on the left side of the skull were normal, and the petrosal veins of the right side were only thrombosed for a short distance in the neighbourhood of the sinus and bulb. The upper remnant of the right internal jugular was filled with purulent clot, as was also the condition of the vein between the lower ligature and the innominate. *Lungs.*—Innumerable small, septic infarctions in both lungs; some recent, others broken down into abscess cavities. Hæmorrhagic pleurisy on the right side.

Note.—I may mention that there has been quite a series of cases of septic sinus thrombosis, complicated with purulent infarctions in the lungs, in the hospital in Glasgow with which I am connected, during the past twelve months. In all of them the lung complication had begun before admission to the hospital. One of the cases, under the care of my colleague, Dr. Connal, who permits me to refer to it here, presented what must be a very unusual phenomenon in connection with the ligaturing of the internal jugular. When the internal jugular vein had been exposed in the usual situation, and was seen to fill and collapse with the respirations, a slight hissing sound was suddenly heard, and at the lower angle of the wound some air-bubbles were seen. No

explanation of this could be found at the time, and the vein was ligatured in the usual way. As some infiltration of air was noticed into the surrounding tissues, the wound was not sutured, but simply packed. On the next day extensive emphysema was found round the neck, over the chest, and even over the abdomen. The condition fortunately soon began to pass off, but I am not sure that it had entirely disappeared before the patient's death, which took place a few days afterwards, evidently from the lung complication. At the *post-mortem* examination careful inspection of the lung and the trachea failed to find the source of the emphysema. I would be much interested in knowing if any gentleman present has had such an experience in connection with ligature of the internal jugular.

Mr. A. L. Whitehead said Mr. Barr had raised two interesting points in connection with the treatment of septic thrombosis of the lateral sinus and of the jugular. He could understand why Mr. Barr did not tie the jugular on the first day—the patient's condition was so critical; but he wondered why he waited more than forty-eight hours. The condition of the lower end of the bulb was so bad that he had obviously not gone beyond the disease. With regard to the operation on the sinus itself, if one slit up the sinus close to the wound, then opened it backwards until there was a gush of blood, and at once pushed in iodoform gauze, some septic clot was very liable to be pushed in with it. He (Mr. Whitehead) had had two or three cases lately, and had been very much impressed by the advisability of first of all exposing the sinus backwards until a point was reached where it appeared to be healthy. He suggested slitting it open, and, if fluid blood came, plugging it, and then deliberately opening the sinus downwards and removing the clot there. In two cases which he had had recently he had demonstrated a small amount of clot distinctly adherent to a portion of the sinus wall, close to the bone disease, and not blocking the sinus at all. It was a partial thrombosis, giving rise to general septic infection. By blocking the sinus above, and carefully removing the clot, there was no necessity for ligaturing the jugular at all, because there was no clot extending downwards. Those were not such severe cases as Mr. Barr's.

Mr. Arthur Cheatle said he would like to hear how many of the members had felt the cord-like swelling in the neck in thrombosis of the lateral sinus, which practically all the books mentioned. He had had a fair number of cases of lateral sinus

disease, but he had not felt that cord-like swelling. If such were present it meant that the mischief had extended right down, and that the case was practically beyond surgical aid. It was given as one of the constant signs to look for in thrombosis of the lateral sinus, and he thought an effort should be made to get that statement corrected in the text-books. It might be one of the ultimate signs. He agreed with Mr. Whitehead as to the treatment of the upper end of the sinus in cases of thrombosis. He had had an interesting case at King's College Hospital, in a child aged twelve, who had never had a rigor, and yet whose lateral sinus was full of pus.

Mr. W. Permewan said that he, like Mr. Cheatle, had failed to find the cord-like swelling in any case of the affection, but he had found a peculiar superficial tenderness of the skin on that side of the neck, in the course of the vein.

Mr. C. H. Fagge asked whether it was not the case that the cord-like swelling in the neck was simply cervical adenitis. He had seen such swellings in the neck in cases of sinus thrombosis, but had taken them to be glandular. He thought it very doubtful whether anyone could feel an inflamed or suppurating jugular vein. He did not agree with Mr. Cheatle when he said that this case was peculiar because this patient had no rigor. He (Mr. Fagge) thought that if the comparatively high mortality from lateral sinus disease was to be reduced, patients must be operated upon before rigors occurred, because, in his opinion, the occurrence of a rigor meant a systemic infection. He meant that a patient with lateral sinus thrombosis did not have a rigor until there had been an infection, certainly from toxins and probably from organisms of the general circulation by means of the jugular vein. He was not sure whether repeated rigors occurring before the patient was seen were not, in this sense, an argument against operation, because the probability of pyæmia was so great. He had seen, certainly, three cases of lateral sinus thrombosis without rigors, and had not thought it was anything marvellous. Judging by other surgical infections of veins, he thought the diagnosis ought to be made before the occurrence of rigors, which he did not regard as symptomatic of sinus thrombosis *per se*.

Mr. Hunter Tod asked how Mr. Fagge diagnosed the pre-rigor stage of lateral sinus thrombosis.

Mr. Fagge replied that in his cases he had diagnosed sinus thrombosis only by meeting with it in the course of the ordinary operation on patients who were acutely ill, just as one met with

extra-dural abscesses which nothing but the general condition of the patient led one to suspect before operating. The bone disease led him to the sinus in these cases, for in them there was a peri-sinuous, extra-dural abscess, and at the bottom of it there was a necrotic mass in the lateral sinus. But there had been no rigors, because in his view the passage of infection into the general circulation was presented by terminal aseptic clot.

Dr. Watson Williams said that as there was no rigor in his case, it would be interesting to hear what symptoms led Mr. Cheatle to open the lateral sinus.

Mr. Cheatle, in reply to Dr. Watson Williams, said the child was desperately ill, and there was a swelling over the emissary vein. When the antrum was opened a dark, carious spot in the posterior antral wall led to a large extra-dural abscess in the posterior fossa and to the thrombosed vesicles.

Dr. Urban Pritchard said it was interesting to remember, as the President and he could, what occurred in pre-operation days. It was very well known that severe rigors in an acute mastoid case did not necessarily mean lateral sinus thrombosis, nor necessarily a fatal result. One of the most marked cases of rigors he ever saw was in a case of acute mastoid disease, some twenty-five years ago, when surgeons were in the position, which they wished never to be in again, of merely drilling the mastoid. The case had marked rigors. He put her into hospital, drilled into the antrum, and she got quite well. The recollection of those pre-operative cases made one think, and prevent one being too certain in diagnosis when seeing doubtful cases now.

Mr. Waggett said it was now clearly understood that rigors did not indicate a general infection of the blood, but simply that a toxin had entered the blood. Bacteriologists now clearly distinguished between general blood infections and localised infections, which simply poured their toxins into the blood.

Mr. Mole said he had had a case in which there were rigors with a temperature of 104° F., with middle-ear disease, and a stinking discharge from the ear. He did a radical mastoid operation. He did not do any more at the time, thinking that, if it were necessary, he would do a further operation afterwards. He thought that was necessary, and that if it were not done the patient would die. The friends refused. He had rigors for two or three weeks, but eventually got quite well.

Mr. Atwood Thorne asked, in connection with the swelling on the side of the patient's head, between the mastoid and the occipital

protuberance, whether there was direct connection between the free gas found in the swelling and the gas found in the intra-cranial sinuses.

Mr. Stoddart Barr, in reply, said that Mr. Whitehead asked why he delayed so long before the second operation. It was really less than forty-eight hours. Perhaps it would have been better if only twenty-four hours had been allowed to elapse. He received a considerable fright at the first operation: the patient's condition for a couple of hours was so alarming that death was expected at any moment. He therefore considered the delay justifiable. He did not appear to have explained clearly that the sinus was exposed back until a healthy portion was reached, or a part which was suspected to be healthy, and then it was slit up. The sinus at the knee hardly required slitting open; it was perforated by so many apertures, and was full of fluid pus. The swelling referred to by Dr. Atwood Thorne was about mid-way between the mastoid and the external occipital protuberance, and it distinctly crepitated on palpation. On cutting behind, to expose the sinus, the emissary vein was discovered, which was found to be thrombosed and softened, and the contents practically purulent. It had infected the soft tissues, and they had become infiltrated with pus and gas.

Portion of the Left Temporal Bone, from a Fatal Case of Chronic Suppurative Otitis Media, with Eventual Mastoid Abscess, Thrombosis of both Lateral Sinuses, and Subarachnoid Suppuration below the Sinus of the Right Side.

By James Donelan.

The patient, an Italian, aged twenty-four, had scarlet fever fifteen years ago, and, since that time, a purulent discharge from the left ear, with frequently returning pains on that side of the head, and about the mastoid region. He had some treatment in Italy, and at the out-patient department of the Central London Throat Hospital, last summer, with the result that the discharge and pains were much less. He was admitted on January 9 into the Italian Hospital, having been ill for the previous ten days with headache, vertigo, and vomiting, which were believed to have been the result of an overdose of calomel. When seen in the hospital, he had pain and swelling over the left mastoid and side of the neck, rigidity of the neck, headache, and a slight fœtid discharge from the left ear. His temperature was 103° F., his pulse 78. There was no paralysis, ocular or otherwise; he was

intellectually bright and clear, and, being a man of good education, expressed himself both in Italian and fluent English quite clearly. He thought his headaches had some connection with the discharge from his ear, but though an operation had been suggested in Italy he had always dreaded and declined it.

The diagnosis of acute mastoid abscess, with probable thrombosis of the left lateral sinus, was made, and the patient was at once prepared for operation, and anæsthesia was commenced at 6.15 p.m. The operation commenced at 6.20. The superficial tissues were much engorged, and in spite of the free use of adrenalin the oozing from the bone was very troublesome. On making the first close approach to the cavity, and before the chisel really entered it, the pus literally squirted out, showing that it must have been retained under considerable pressure. The septa between the antrum and the mastoid cells had disappeared, and when the outer wall was removed it presented the large cavity now seen. The cavity was swabbed out with 1–1 carbolic acid, and it and the middle ear were irrigated with 1·1000 sublimate solution. The incision was extended backwards so as to explore the lateral sinus, but before it could be followed up the patient showed decided signs of collapse, and the anæsthetist advised postponing further measures. It was now 6.50, and anæsthesia had lasted only thirty minutes. It was accordingly decided to postpone the sinus operation until next day (Thursday). The patient was then remarkably better, temperature normal, pulse 80, no pain, no discharge from wound, some sanious discharge from the meatus, but no pus. For the next two days he continued very well, and seemed likely to make a rapid recovery. The operation on the sinus was, accordingly, again postponed. On Sunday morning, however, he seemed drowsy, and complained of occipital pain. There was no ptosis, nystagmus, or paralyses. The eyes were, however, intolerant of light. Speech distinct, but slow; bowels constipated. There was some retraction of the head, but Kernig's sign was absent. The pulse had fallen to 60, while the temperature had gone up to 99·5° F. The wound looked quite healthy and had almost healed by first intention, except at the lower end. As the symptoms appeared to point to abscess of the temporo-sphenoidal lobe, as well as sinus thrombosis, it was decided to examine both structures. The patient was anæsthetised. The temporo-sphenoidal dura was found to be normal, but before the sinus could be exposed the patient collapsed. Artificial respiration, transfusion of salt solution, and all the usual measures in such circumstances were

tried without avail, and the patient died in about an hour and a half.

The autopsy disclosed a circular patch of old meningitic adhesions, extending for about one inch and a half above and one inch below the left lateral sinus at the bend and descending portion. About one inch of the left internal jugular, its bulb, and the lateral sinus as far as the torcular were filled with firm thrombus, showing, however, no visible pus. The right sinus also contained isolated patches of soft thrombus. The only apparent pus was a circular patch about the size of a shilling on the surface of the cerebellum below the bend of the right lateral sinus—that is, on the opposite side to the mastoid abscess. The right tympanum and temporal bone, as well as the other organs, were healthy.

While one regrets that the condition of the patient prevented the opening of the sinus at the first operation, it is not probable that his life would have been saved in view of the collection of pus on the right side. The case is in other respects instructive, as while it is probable that a cannulated thrombus had already formed in the left lateral sinus, the patient's remarkably improved condition after the evacuation of the abscess encouraged the belief that all danger was at an end.

Mr. Whitehead asked what was the temperature prior to the first operation, and what the age of the patient was. In young children he had been twice misled by the temperature being practically normal, persistent vomiting and intense headache leading him to suspect brain abscess. But *post mortem* there was nothing found but a firm thrombus of the lateral sinus.

Dr. Dundas Grant asked whether there was any disease of the temporal bone on the right side.

Dr. Donelan, in reply, said the patient was twenty-four, and had had scarlet fever fifteen years ago. His temperature on admission was 103°. The right ear was healthy.

Epithelioma of the Tympanic Mucosa, following Chronic Suppurative Otitis Media.

By W. Milligan.

The patient, a young married woman, aged twenty-nine, had suffered from chronic suppurative catarrh of both middle ears for twenty-seven years, following a severe attack of measles when two years of age.

For a fortnight previous to applying at the hospital she had had severe pain over the right side of the head, intermittent during the day but almost continuous at night.

Upon examination the right auditory meatus was found blocked by a somewhat dark-coloured, greyish polypus, bathed in a profuse muco-purulent, fœtid secretion. There had been no hæmorrhage, and the growth did not bleed upon manipulation. The hearing power upon the right side was almost gone; there was, however, no evidence of labyrinthine involvement. There was slight facial paresis upon the right side. The left membrana tympani was perforated—in fact, nearly gone, and the tympanic mucosa was discharging fairly copiously. Her hearing power upon the left side was 10 per cent. of the normal. There was no nerve deafness.

Antiseptic treatment was first prescribed. On seeing the patient a week later the right-sided facial paralysis had increased considerably, and the pain was as severe as formerly.

The patient was admitted to hospital and a radical mastoid operation performed. No undue hæmorrhage was noted at the time of operation. Very considerable destruction of bone was found to have taken place along the roof of the antrum, and in the region of the descending portion of the Fallopian aqueduct. For the first few days following the operation there was great relief, and at the first dressing, five days after the operation, the wound looked well. Four days later pain was again complained of, accompanied by slight elevation of temperature. When the dressings were removed it was found that all the stitches had given way, and that the antro-tympanic cavity was full of a fungating, vascular, and sloughy growth. A portion of this material was removed and examined microscopically. Enormous proliferation of squamous epithelium was found, with well-marked cell-nest formation. The cavity was thoroughly scraped and treated as an open wound, being lightly packed with gauze. The dressings were changed each day, and morphia was given at night. There was now considerable loss of weight and of strength. There were no enlarged glands to be felt at this stage.

The patient was referred to the X-ray Department at the Manchester Skin Hospital, and is at present under treatment there. There is no appreciable improvement, however, after three weeks' treatment, but a very marked increase in the amount of discharge from the cavity has been noted.

The case is brought forward as an illustration of one of the

rarer results of chronic suppuration of the middle ear, namely, the development of malignancy after prolonged irritation in a suppurating cavity.

Mr. Permewan said he did not know how rare the condition was, but he described an exactly similar case five or six years ago, where malignant degeneration took place after some twenty-five years' suppuration. It was operated upon in the same way, and the patient eventually died. That case also had facial paralysis, and it was said at the time that that always occurred.

Mr. Cheatle said that some years ago Mr. Ballance showed before the Society a case of sarcoma in which all the nerves emerging at the jugular foramen were paralysed. A week later he, Mr. Cheatle, saw a case which Dr. Ferrier sent to him at King's College Hospital, in which there was the same paralyses. There were granulations in the fundus, and on removal he found them to be epitheliomatous.

Dr. Pritchard reminded members of the great relief to the pain afforded in these cases of carcinoma of the middle ear by operation. It might be said that it was against the rules of surgery to interfere with carcinoma unless it could be completely eradicated, but there was an exception in the cases under discussion, because of the great relief to the pain.

Dr. Grant said he could corroborate what Dr. Pritchard had said, by reminding members of a case which he described at the time Mr. Ballance's case was brought forward. The operation made the patient completely comfortable for six or eight weeks afterwards; he then developed temporo-sphenoidal abscess, and died after having become unconscious. In that, and in other cases which he had seen, a most striking feature was the extraordinary extent of bare bone on the posterior wall of the meatus. In the case referred to the epithelioma showed itself as very pale granulations, and it did not excite his suspicions. It was not until after he had opened the mastoid that he found it full of tissue which was different to the usual. Since then the same points had led him to a diagnosis at an earlier period, though too late for anything effectual to be done. His colleague, Dr. Abercrombie, had a case the other day in which the features were almost exactly like those of Dr. Milligan's. The petrous bone was quite full of epitheliomatous tissue, which he removed. He kept the wound behind open, as it still was, and the patient was now more comfortable.

Mr. R. Lake said it was advantageous to have growths of the kind

reported, as there were not many on record. Where a malignant growth in the middle ear appeared after a long-continued suppuration it must be totally different from malignant disease starting in the middle ear without previous suppuration, because one could not see that it was very easy to have squamous epithelium in the middle ear unless there had been an epidermisation of the mucous membrane beforehand. In recording and quoting cases of malignant disease of the middle ear, care should be taken to separate them into two distinct classes, one with, and the other without suppuration, for some time before. Such cases should always be carefully recorded.

A Case of Cerebellar Abscess.

By A. L. Whitehead.

The patient, a boy aged fifteen, had chronic left otorrhœa for three years following measles. Severe pain had been present for fourteen days in the left ear, and ten days before his admission into the hospital a mastoid swelling appeared.

On admission there was an abscess over the left mastoid region, and the auditory canal contained pus and granulation-tissue. The temperature was 99° F.; pulse 98; respirations 18. The radical operation was performed and extensive disease was found, the lateral sinus when exposed being covered with granulation-tissue.

The boy recovered satisfactorily from the operation, but complained of persistent headache. The temperature was normal and pulse 84. On the second day after the operation it was noticed for the first time that the optic discs were congested and the edges blurred. Nystagmus could be elicited on extreme rotation of the eyes to the left.

Although the boy seemed quite bright and well and was not in the least drowsy, the presence of headache, nystagmus, and commencing optic neuritis, indicated the necessity for exploration of the cranium.

Three considerations determined the exploration of the cerebellum rather than the temporo-sphenoidal lobe: first, the presence of nystagmus; second, the extension of the disease in the temporal bone backwards, the tegmen being healthy; and thirdly, that observations on a large number of cases show that when intra-cranial abscess exists with external mastoid abscess it is almost invariably present in the cerebellum, and very rarely in the temporo-sphenoidal lobe.

The cerebellum was explored through the area between the posterior semicircular canal and the lateral sinus, and an abscess in the left lateral lobe containing about one ounce of pus evacuated. The abscess was not washed out at the operation but was irrigated at subsequent daily dressings. It would be valuable to know the opinions of the members of the Society regarding the value of irrigation at the operation or at the subsequent dressings. There was uneventful and complete recovery.

Mr. Permewan asked whether there was ample room to explore the cerebellum in the space between the semicircular canal and the sinus ?

Mr. Lake said he had operated through that particular area, and removed pus from the posterior fossa, and he could corroborate what Mr. Whitehead had said—there was ample room.

Mr. Hunter Tod said he had recently operated on two cases of temporo-sphenoidal abscess. After performing the complete mastoid operation he chiselled through the bone at the junction of the squamous portion of the temporal bone and the tegmen tympani. The opening was only sufficiently large to insert a small tube into the brain abscess, the outer end of the tube being sutured to the skin. He did not afterwards irrigate the cavity. In one case the tube was kept in five days, and in the other nine days. In exploring the cerebellum he did so in the same way as Mr. Whitehead, going between the lateral sinus behind, and the semicircular canals in front, and found this method satisfactory. In answer to Mr. Whitehead, Mr. Tod said that by a small opening he meant an opening sufficient to admit a tube about the size of one's finger. He had used the word "small" in contra-distinction to those who, on exploring an intra-cranial abscess, removed a large area of the bone.

Mr. Secker Walker said he did not think it was possible to effectually syringe out the abscess cavity at the time of operation. The pus is forced out by the pressure behind, and as it escapes the soft abscess walls collapse and come together, entirely obliterating the cavity, so that the injection of fluids without using force is impossible. Only when the abscess is chronic and has a thick non-collapsible wall can this be done. He believed it was entirely a matter of chance, in acute cases, as to whether the cavity completely emptied itself, or there remained behind, shut off by the collapsing walls, a small collection of pus, which might easily produce a second abscess. This would probably not be suspected at

the time, and was, in his opinion, the usual cause of recurrence. As for effective and thorough syringing in the repeated dressings of these cases, he thought it merely meant a cleansing of the cylindrical hole produced by the drainage-tube, and could very soon be dispensed with.

Mr. E. Waggett said that when an abscess had been detected with the pus seeker the instrument should not be removed until a drain-tube had been inserted.

Mr. Whitehead, in reply, said he found absolutely no difficulty at all in the operation; there was ample room. The sinus was partially held back by the periosteal elevator by an assistant, and then the bone could be easily chipped away. He had been interested in what Mr. Tod had said about temporo-sphenoidal abscesses: he, Mr. Whitehead, had had two on two following days. His experience was that they did not do very well with a small opening and a small drainage-tube. They must be opened more freely, otherwise there would be a re-accumulation of pus later on. Still, an opening admitting a tube as large as the thumb, as mentioned by Mr. Tod, would be quite sufficient. He thought Mr. Secker Walker had given the true explanation why success was achieved in some operations and not in others. If the cavity was soft and thin-walled, and opened in a dependent part, the walls would be forced together, and nothing more need be done. In other cases, where there were loculated cavities—and he thought the President's case was one such—it was difficult to know what to do. If it were opened again and explored, and something resistant felt, it was difficult to know whether it was the wall of a saccule or healthy brain tissue; and further explorations might result in the spread of the infection and the death of the patient.

Notes of a Fatal Case of Cerebellar Abscess (with Specimen).

By Chichele Nourse.

The patient was a boy, aged six, with chronic otorrhœa on both sides, of eight months' duration. When first seen he had suffered from severe pain in the left ear for five days, with frontal headache and occasional vomiting. There was pallor, hebetude, and an appearance of serious illness; moderate fever and a rapid pulse. Some tenderness existed over the left mastoid, but no swelling. In the attic of that ear there was a granulation. The case was regarded as urgent, but, owing to the parents, it was not until four days later that the boy was admitted to the hospital. At that

time his condition was unchanged. There was no optic neuritis; the knee-jerks were normal; there was no nystagmus or vertigo. A complete mastoid operation was performed the next day. The bone was discoloured. The first stroke of the gouge liberated thick, greenish pus, and on removal of a thin shell of bone a large cavity was exposed, communicating above with the antrum, and behind with the lateral sinus, the wall of which was covered with granulations. The tympanum, attic, and antrum were full of granulations. Dr. Wyatt Wingrave reported that the pus contained a bacillus, morphologically like Pfeiffer's, in fair numbers, and also a few cocci.

Immediately after the operation the pain and fever disappeared, the pulse became steadier, and the general condition improved. Progress was satisfactory until the sixteenth day, when the patient vomited several times and complained of headache. At the same time the temperature rose to 100° F., and the bowels became constipated. Then followed drowsiness, dilatation of the pupils, retraction of the head, and general irritability. The headache, chiefly occipital, became very severe. Death occurred rather suddenly on the morning of the nineteenth day.

Autopsy by Dr. Wyatt Wingrave.—In the left lobe of the cerebellum was a large abscess, of which the outer wall was formed by an extremely thin layer of brain-substance. It contained about an ounce and a half of greenish pus, with a faint, but not fœtid, odour. It was apparently of long duration. Microscopically the pus contained a few irregular nuclei and granular *débris*, with diplococci. Beyond some venous distension the brain and meninges were normal. There was no clot in the sigmoid sinus.

THIRTIETH ORDINARY MEETING.

Saturday, March 9th, 1907.

The President, Mr. A. E. Cumberbatch, in the Chair.

The following communications were made :

A Case of Radical Mastoid Operation in which the Ossicles were left Undisturbed.

By Chichele Nourse.

The patient, aged thirty, had old-standing middle-ear disease on the right side with a perforation in the postero-superior quadrant, from which a granulation was removed in September last. The discharge was scanty. Mastoid pain of increasing severity was the reason for operation.

The antrum was small and contained pus under pressure and *débris*. The disease was confined to that cavity, the aditus, and the posterior part of the attic. The operation was completed in the usual way, but the ossicles and the remainder of the tympanic membrane were left undisturbed. No packing was used. The wound was not grafted. Healing was complete in between five and six weeks.

Mr. A. Cheatle said the preservation of the ossicles in such a case was not a new operation at all. He could not give the references at the moment, but cases had been reported from America in which the ossicles had been conserved in what might be called the incomplete complete operation. He believed the operation could be used more frequently than hitherto, especially where there was no caries of the ossicles.

Dr. Dundas Grant said that at one time he showed before the Society a case illustrating that mode of operating. The result was satisfactory, but members could not convince themselves as to whether any advantage accrued to the patient from the retention

of the ossicles. The hearing power was very good, but it was difficult to say whether it was better than it would have been without the ossicles, which were necessarily very hampered in their movements. No doubt the retention of a portion of the tympanic membrane was a protection to the interior of the tympanum; but there was the disadvantage that it acted as a screen, behind which caseous and other undesirable products could accumulate. In that way it might be a source of annoyance. When the mastoid had not been completely removed there was always some doubt as to whether the whole disease had been got away. It was for the future to decide whether there was any advantage over the radical mastoid operation as understood by otologists. The result in Mr. Nourse's case seemed to have been extremely satisfactory.

Dr. Jobson Horne said Mr. Cheatle remarked that the operation had a future; he (Dr. Horne) understood it had a past, having been performed some thirty years ago. For the sake of historical accuracy, if for no other reason, he suggested that the literature of the subject should be looked up, and a note inserted in the *Transactions*.

Dr. W. Permewan asked what class of case the operation should be reserved for. It was advisable to distinguish between those cases in which it was intended to remove the ossicles, and those in which it was not. He thought there was a small class of cases in which the operation was justifiable, but he was inclined to the view that in the cases where it seemed good to leave the ossicles there was no need to have operated at all.

Dr. Urban Pritchard said he did not think there were a very large number of cases suitable for that operation; but there must be some. Those suitable would be cases where there was not a large amount of disease behind, so that one would not be locking up a cavity which was not altogether unsuspicious. But, supposing the operation were done, leaving the ossicles, and trouble subsequently arose, nothing was easier than to complete the operation afterwards by removing the ossicles and the membrane.

Mr. Yearsley said the most surprising thing to him about the case was that the patient should have had old-standing middle-ear trouble, with a perforation in the postero-superior quadrant and attic disease (as stated in the programme), without there being any caries of the ossicles. In such old-standing cases, where there was disease in the attic and the antrum, one was almost certain to find the ossicles diseased.

Dr. Logan Turner thought the case should come up for discussion at the next meeting as one of chronic middle-ear disease treated other than by the complete radical mastoid operation. There would then be time for the literature of the subject having been looked up, as suggested by Dr. Jobson Horne.

Dr. W. Milligan asked what preliminary treatment had been used prior to operation. He had never regarded the procedure adopted in the present case as a new operation. He had read of a precisely similar operation in American literature many years ago. The operation, he thought, must have extreme limitations; it might succeed in an occasional case, where there was limited disease in the neighbourhood of the antrum. When such cases were recorded it was imperative that the Society should be put in possession of the facts as to what preliminary treatment had been adopted.

The President said that one of the difficulties likely to arise in such a case actually occurred in his experience. This was in a case of chronic suppuration with a small mastoid sinus. As the greater portion of the membrane was intact, he thought he would do a limited operation. It failed because, the deeper part of the outer wall of the aditus being left intact, granulations sprang up and prevented the free escape of discharge posteriorly. In the end he had to do a complete Stacke, and the patient did well. One of the troubles in these cases would appear to be the liability of the part of the aditus not laid open to be obstructed by granulations.

Further Remarks upon a Case of Squamous Epithelioma originally Communicated to the Society in February, 1906.

By W. Milligan.

At a meeting of this Society, held upon February 5, 1906, I described a case of malignant growth originating in the skin over the left mastoid process in a girl, aged nineteen, and showed the specimen, at the same time showing a microscopic slide, and also a photograph of the patient prior to operation. In July, 1906, the patient presented herself again for examination, when it was found that healing had taken place with the exception of a small area about the size of the end of an ordinary lead pencil, in the centre of the scar tissue. No enlarged glands could be detected. The patient was again put under chloroform, and the ulcerated area thoroughly scraped with a sharp spoon. The patient was subse-

quently sent to the Light Department at the Manchester Skin Hospital and treated by means of X-rays. After three months' treatment complete healing has taken place, and at the present time the scar appears perfectly healthy. Her general condition has also much improved, and she has put on over a stone in weight. There is still slight drooping of the angle of the mouth upon the left side.

The President thought Dr. Milligan was to be congratulated on the success of his case, and on having had the courage to operate after a distinguished opinion had been given that it was inoperable. It would be a great encouragement to members to attempt similar cases in the future. He asked whether the growth involved the bony structures beneath.

Dr. Permewan understood from Dr. Milligan that there was not much hæmorrhage, and he supposed it did not occur to him to tie the external carotid or any other vessel.

Dr. Milligan, in reply, said he did not think the growth involved the bone, but in order to make assurance doubly sure he had removed the apex of the mastoid process. He had intended to tie the external carotid, and had made an incision to do so, but as there was very little hæmorrhage he had not found it necessary.

Remarks upon a Case of Attempted Suicide following a Mastoid Operation for Chronic Middle-ear Disease, and Remarks upon a Case of Suicide following Acute Bezold's Mastoiditis.

Communicated by W. Milligan.

Dr. Pritchard said he doubted very much whether the ear trouble in those cases had anything to do with the insanity. There must be a certain proportion of ear cases with a tendency to insanity. If ear disease produced that mental condition otologists ought to see a good deal more of it. He had only seen one such case, and in that the patient tried to cut his throat with a remarkably blunt broken penknife, and, needless to say, he did not succeed. There was mastoid disease, but the patient died of tubercular meningitis.

Mr. E. B. Waggett said he had gained an impression that people who had had complete mastoid operations sometimes became extremely miserable—he scarcely liked to say neurasthenic. He had now three young women under his care upon whom complete mastoid operations had been performed, and, although as aural

cases they were very satisfactory, they were constantly worrying about their general condition. The most miserable man he had ever seen lived nine years after removal of part of his cochlea and a cerebellar abscess. It was well known that the removal of organs had a depressing effect on the mind and on the whole economy, and it would be useful if evidence were collected on the subject whether the complete mastoid operation, with removal of the musculature, the ossicles, etc., had a more profound effect on the general condition than a minor operation.

Dr. Edward Law said the meeting had just heard of three cases of suicide in connection with suppurative ear disease. He had met with one, and this patient also tried to commit suicide in the same way—namely, by cutting his throat.

Dr. Jobson Horne said Mr. Waggett had raised the question as to whether the mastoid operation was a cause of insanity. But another point of view was whether that operation might not be the means of preventing what would otherwise become insanity. He could not call to mind any work on the subject, but it was a point which could be worked out better in asylum practice.

Mr. Cheatle said that one important point was the family history of such patients; he believed everything hung upon that in such cases. He had mentioned at meetings of the Society two cases of malignant disease of the ear which died of acute mania, and he had had another such case.

Dr. Dundas Grant agreed with Dr. Jobson Horne that the frequency of ear disease in asylums might be looked into more exactly. He was sure it was of frequent occurrence in those institutions, and he thought statistics ought to be easily procurable, because the inmates were under surveillance, and could be easily reached. He suggested that Mr. Waggett should revise the terms of his reference to the subject, for there was liability to misinterpretation. If the radical operation caused profound depression in some cases they were so few, he thought, that he did not feel warranted in endorsing Mr. Waggett's statement.

Mr. F. H. Westmacott said he thought the cases under discussion might be classed with those in general surgery in which insanity supervened after an operation. Recently he had known that unfortunate occurrence in two cases: in one case a lady had had her breast removed, and in another an elderly gentleman had had one testicle removed. In both nearly twelve weeks elapsed between the operation and the onset of acute insanity. He thought it would be found that there was a toxæmia produced,

possibly by the disease—and, perhaps, most often by malignant disease—producing a rapidly-ascending nerve-degeneration, and it was not until a certain point had been reached that symptoms of insanity became manifest. He regarded Dr. Milligan's as that class of case, and it was perhaps a coincidence.

Mr. W. H. Bowen considered the subject was outside the province of the Society.

Dr. Watson Williams said he regarded the present discussion as of considerable importance. Having heard the experience of members of catastrophes which had occurred in association with interference in ear disease, would it not be well if some sort of collective investigation could be made, so that the subject should not be left in its present unsatisfactory condition? From the cases brought to their notice there seemed enough to suggest an increased liability to mental aberration in those who suffered from gross ear lesions. If that were so, it was easy to conceive that an operation in, or near, the implicated area might be the last straw, which would send over the border line a case tottering on the verge of insanity. He urged that, having gone so far in discussing the subject, it would be a great advantage if the Society could, in some way, make a collective investigation, so as to have some statistics to go upon. It would be a great misfortune if the Otological Society acquiesced in considering that such a subject did not come within its proper field of inquiry.

Dr. Permewan thought, with Dr. Pritchard, that the mere fact that Dr. Milligan had only met with two such cases was a complete answer to the suggestion that there was a tendency to insanity in such cases in which the mastoid operation was done. He, Dr. Permewan, had not seen the depression such as Mr. Waggett described after the operation. The family and personal history of those cases was all-important. Was it not possible that either or both of them might have had influenza? In the absence of details as to the personal and family history, he did not think it was possible to speak on the general question.

Mr. Yearsley remarked that Dr. Milligan said both the patients suffered from tinnitus before the operation. He would like to hear whether the operation had any results as regards that symptom. It was probably the experience of every otologist that in people with a hereditary tendency to insanity quite a small amount of tinnitus, if neglected, was sufficient to establish definite auditory hallucinations. If the tinnitus remained in the cases, did it have any bearing on the insanity?

Dr. Jobson Horne seconded the suggestion of Dr. Watson Williams, that the Council consider the advisability of investigating the matter. The rules permitted the appointment of committees to conduct special investigations.

Mr. Milligan, in reply, expressed his pleasure that the cases had aroused such an interesting discussion. He did not agree with Mr. Bowen, as he thought the subject matter came well within the province of otology, and the importance of the subject was very considerable. He agreed with Dr. Permewan's and Dr. Pritchard's remarks. He did not believe there was any particular tendency to mental aberration after ear operations. If there were any real connection, otologists would see more such cases than they evidently did. He entirely disagreed with Mr. Waggett's remarks as to the great depression following mastoid operations, his experience being rather the reverse—that after those operations the general condition of the patient was so much improved that, as a rule, the mental condition became much better. One of the marked results of removing septic foci was the great improvement in general health. In answer to Mr. Cheatle, there was nothing particular to say about the family history. Dr. Dundas Grant referred to a very important point, and he referred Dr. Grant to a paper in the *Medical Record* of August 25, 1906, on "Functional Derangement of the Ears and Upper Air-Tract in the Insane." He thought it most important that the class of case under discussion should not be confused with post-operative mania, which category Dr. Westmacott's cases seemed to come under. He thought Dr. Watson Williams' suggestion, that there should be a collective investigation on the subject, was important, because it would put members into possession of definite facts, and the opposite impression could be refuted if necessary. With regard to the tinnitus, in the first case the tinnitus entirely disappeared after operation, but not in the second case, the patient always complaining of it, though he believed it was not so bad after the operation as formerly. He particularly asked about influenza, because so many of these cases were post-influenzal, and the depression after influenza was often very great. His own impression was that there was no direct connection between the ear trouble and the insanity, but he thought it well to bring the cases forward.

Mr. Waggett reminded members that he mentioned four cases of depression out of a very large number of mastoid operations, and the point about them was that, although the cases were quite successful as ear cases, the patients still had depression. The

question was whether the removal of the organ, as such, had anything to do with an abnormal condition of the mind.

Notes of a Case of Cerebellar Abscess Secondary to Chronic Septic Otitis Media, in which Sudden Death occurred prior to Operation.

By W. Milligan.

Cases of sudden death as the result of the presence of abscess of the cerebellum are by no means infrequent, and most modern text-books upon diseases of the ear draw attention to the fact. The explanations usually offered are either pressure upon the respiratory centre, or sudden œdema of the brain-substance in the immediate vicinity of the vital centres. In the particular case about to be narrated, the patient, a young woman, aged twenty-eight, had suffered for years from chronic suppurative otitis media upon the left side. The history given was that she had had on many occasions antiseptic treatment for the affected ear, but that she had never systematically followed up the particular line of treatment advocated. Owing to sudden and severe pain at the back of the head, accompanied by vertigo and sickness, she applied for admission to hospital. She was at once admitted and put to bed. Examination of the affected ear, carried out by Dr. D. L. Sewell, showed a large perforation of the left membrana tympani, fœtid discharge, granulation tissue, and a carious pars promontoria. There was severe left-sided nerve-deafness, but no involvement of the left facial nerve. Her pulse was 58, temperature 97·4° F., and respiration 16. There was no paresis, or paralysis of any muscle, or group of muscles, no optic neuritis, and no nystagmus. Owing to absence from work I did not myself see the patient until thirty-six hours after her admission to hospital. Preparation was being made for operation when the patient suddenly collapsed, and for all practical purposes appeared dead. Respiration entirely ceased, but the pulse continued to beat for twelve minutes, when it also suddenly stopped. The *post-mortem* examination showed an abscess in the left cerebellar lobe. There was considerable œdema of the brain, and a marked increase in the amount of cerebro-spinal fluid.

I have, on a previous occasion, drawn attention to the advisability of withdrawing some cerebro-spinal fluid preparatory to operating upon cerebellar abscesses, in order to relieve pressure,

and, had circumstances admitted, it was my intention to do so in this case. Collapse was so sudden, however, that there was no time in which to get things ready or to secure assistance.

Mr. E. C. West, referring to the question of lumbar puncture, and the relief of the pressure of the cerebro-spinal fluid, said one knew how superficial the outer limit of a cerebellar abscess often was; there was, therefore, a risk of puncture leading to the bursting of the abscess, and the consequent flooding of the subarachnoid space with pus, if the operation were not proceeded with immediately.

Dr. Permewan asked whether the cause of death in these cases was not so much general pressure as pressure of the abscess on some particular vital point, or the extension of the inflammatory process to some vital region. A cerebellar abscess might have been going on for years, possibly without any symptoms, therefore he did not think it could be a general increase of pressure.

Dr. Logan Turner said he had had a similar case to Dr. Milligan's, a case of sudden death in connection with cerebellar abscess. The *post-mortem* examination showed distinct pressure upon the medulla; there was a depression which could have been produced only by the abscess. Mr. Charles Ballance mentioned, in his new work on the surgery of the brain, a point in connection with lumbar puncture; he had on more than one occasion performed lumbar puncture prior to operating on the cerebellum, with the view of relieving the pressure.

Mr. H. J. Marriage said, with regard to cases of cerebellar abscess dying during the administration of the anæsthetic or before starting the operation, he had an interesting case six months ago. He was called to see a patient, a girl, aged thirteen, with acute mastoid disease of three weeks' duration, and signs of abscess, which could not be localised in any way. The patient, who was extremely drowsy, had a slow pulse, subnormal temperature, optic neuritis, and vomiting, but no definite localising symptoms. He prepared to open the mastoid, to try to find indications as to the part affected. But a minute after starting the anæsthetic the patient stopped breathing, though the pulse was quite good. He, therefore, felt sure it must be a cerebellar abscess. Artificial respiration was carried out for twenty-five minutes, during which time he trephined over the cerebellum and found an abscess. Immediately that was evacuated the patient began to breathe again, and he put her back to bed without touching the mastoid.

A week later he cleared out the mastoid, and found a septic track, which ran directly into the abscess-cavity, passing internally to the lateral sinus. The patient did well for a week, and then suddenly died. At the autopsy it was found that she had not only a cerebellar abscess but also a temporo-sphenoidal abscess, which had given no indications, and had probably caused death. The case showed it was worth while to try to find the abscess, even when the breathing had stopped.

Mr. Sydney Scott knew of a case some years ago of cerebellar abscess in which breathing suddenly stopped when the patient was about to be operated upon. The heart continued to beat. Artificial respiration was kept up for three hours, and then abandoned, though the heart was still beating. *Post-mortem* a large cerebellar abscess was found compressing the medulla towards the opposite side. There was no temporo-sphenoidal abscess. Had the operator exposed the cerebellum, as Mr. Marriage had done, it is probable that life would have been saved.

Dr. Milligan, in reply, said he did not think lumbar puncture would be a danger in the direction of causing an abscess to burst owing to the sudden relief of pressure. Some of these cerebellar abscesses were not very superficial, although others were. One might justifiably take the risk of doing a lumbar puncture in the circumstances. With regard to pressure on the medulla, he had always understood that to be the cause, though it was difficult to make it out. As Dr. Permewan suggested, there might be something else in addition. He had not seen any resulting indentation of the medulla, but was much impressed by Dr. Turner's remark. With regard to the remarks made by Mr. Marriage, he thought one should proceed with the operation, otherwise the patient would die, whereas, if the operation were carried through rapidly, possibly the patient would recover. He believed that Sir William MacEwen, in his book, refers to a case in which artificial respiration was carried on for fourteen hours.

A Case of Chronic Left Otitis Media of twenty years' duration; Caries; Cholesteatoma; Attacks of Vertigo; Radical Mastoid Operation on February 20; Uninterrupted Recovery.

By James Donelan.

Dr. Donelan said that in the case of so very recent an operation it was obviously unnecessary to say that the words "uninterrupted

recovery" referred only to the patient having got over the immediate effects of the operation. It was on account of some peculiar circumstances in the recovery, and not because the case was otherwise specially interesting that it was brought forward.

The patient, a woman, aged twenty-eight, had suffered from otitis of the left ear with perforation in the course of measles some twenty years ago. The discharge had continued since almost without interruption. The patient had, however, made no effort to check it as she had been told it would be dangerous to stop a discharge from the ear. She consulted the present reporter four or five years ago, but she discontinued treatment. He saw her again about two years ago and two or three times since. While there was nothing in her general condition to account for the change she had become greatly emaciated and was very depressed. Latterly she had frequent attacks of slight vertigo with a disposition to fall to the right. There was no pain, no fever, and, except the deafness and vertigo, nothing to direct attention specially to the ear.

She was examined under anæsthesia on February 13. The left tympanic membrane was represented by a narrow band round a large central perforation, through which a mass of granulation tissue and cholesteatoma protruded. Carious bone could be felt in the aditus; the malleus and incus had apparently disappeared. As there were no urgent symptoms, and the patient could not come into hospital for a few days, further measures were postponed for a week.

On February 20 the mastoid antrum was opened by Stacke's method, care being taken to preserve the periosteum. The antrum contained pus, cholesteatoma, and a small sequestrum. The mastoid being eburnated and no mastoid cells traceable in immediate relation to the antrum, the cavity was enlarged no more than was absolutely necessary. The external wall of the attic was removed, and the whole space formed by the operation carefully curetted and disinfected with 1 in 10 carbolic solution.

The mastoid cavity and aditus, as exposed, formed a small cavity extending half an inch from the posterior wall of the tympanum, to which it corresponded in depth, and was about three eighths of an inch high. A flap, a little larger, was cut from the periosteum and pressed into the cavity, and a piece of tissue of corresponding size was raised from beneath the cartilage of the auricle, remaining attached, however, near the meatus. This was turned forward and also inserted into the cavity. The post-auricular wound was then

closed by sutures, no drain being used. A loose strip of cyanide gauze was inserted in the meatus and the usual dressing applied. The patient made an absolutely uneventful recovery. The post auricular wound healed by first intention, and there was no discharge from the meatus which remained absolutely dry. The size of the meatus was not, however, what the operator hoped for, having become much occluded. Contraction of the cicatrices was, however, going on, and the passage had become more open in the last day or two. The hearing, which was completely lost, except in contact, before the operation, had already considerably improved. He would be glad to hear from other members what was their experience of such unusual, though, apparently, not unfavourable, termination of these operations. He had had another similar case some two years ago, and the patient had remained quite well since, though the improvement in the hearing was not so marked.

Dr. Dundas Grant remarked that even when considerable narrowing was present soon after the operation, there sometimes occurred a kind of centrifugal contraction by which the soft parts were drawn closer to the walls of the bony cavity, so that there was a probability of this taking place in Dr. Donelan's case, even if complete occlusion had occurred. There was sometimes no recrudescence of suppuration, though the patient would have to be instructed to report the occurrence of pain in the ear or other symptoms indicating such an event. In a case of Dr. Grant's the patient, after a number of years, returned, reporting the presence of pain in the ear; but this was found to be occasioned by a carious molar, the removal of which caused the entire disappearance of the pain.

Dr. Donelan, in reply, said he was glad to know no untoward symptom had followed the occlusion in Dr. Grant's case. The other case to which he had himself referred was that of an Italian waiter, who in all the vicissitudes of his calling had remained quite free from any inconvenience. Might it not be possible in the case of these small mastoid antra, by operating under absolutely aseptic conditions, to aim at obliterating the cavity, so to speak, by first intention? In cases where there was acute virulent septic conditions such an attempt would probably be attended with danger; but where the operation was undertaken, as in this instance, when there were no acute symptoms, the experience of the cases mentioned seemed to show that it was not unreasonable to expect a favourable result.

A Case of Chronic Middle-ear Suppuration, with Necrosis of the Posterior Labyrinth, Facial Paralysis, Large Parotid Swelling, and Pus tracking down behind the Jaw to the Soft Palate and Tonsil.

By Arthur Cheatle.

A man, aged twenty-two, a leather dresser by trade, came to King's College Hospital on December 3, 1906. The history of the trouble is rather vague. He stated that he had never had anything wrong with his ears until the present illness, which started one year and nine months ago in the left ear, but it is evident that he is wrong, for there is a perforation in the right membrane. One year and nine months ago he was an in-patient for five days in the Guildford Hospital for a discharge from the left ear, which came on without pain. The discharge had never ceased since. Six months ago he began to suffer with a constant headache in the left temple and side of the face, and the deafness increased with a constant high-pitched whistling tinnitus.

Six weeks previously a swelling appeared in front and below the left ear, and gradually increased in size with much tenderness.

Three weeks before being seen he noticed that his face was immovable on the left side and was drawn up on the right, the mouth preceding the eye in the onset of the paralysis.

For fourteen days he had been unsteady in his gait with a tendency to sway to the left. He had never fallen down, had never been sick or felt sick. Objects round him had never appeared to move. For one week he had experienced pain on swallowing.

For four days pain in the temple and below the ear had been very great, preventing him from sleeping, and it was on account of this pain that he came to the hospital.

He had been doing his work up to four days before his attendance. He walked quite steadily into the room. His face was pale. A large, tender, firm, pale swelling occupied the left parotid region. The left side of the face was paralysed. The left ear was discharging thick pus, and a large polypus blocked the meatus. There was no swelling or tenderness behind the ear. It was difficult for him to open his mouth, but it could be seen that the left side of the soft palate appeared full, and that the tonsil was pushed downwards and inwards. There was no nystagmus, optic neuritis, or ocular paralysis. The temperature was 97° F. ;

respiration and pulse normal. The nose and post-nasal space were normal. There was a large loss of the inferior segment of the right membrane.

At the operation, on December 4, the outer wall of the antrum was dense, and the mastoid process diploëtic. The antrum was small, and full of degenerated lining membrane and cheesy pus. The mastoid process was diploëtic and free from disease. On clearing out the polypus from the middle ear it was found that the upper and back parts of the inner wall were absent, and the large opening led to a big cavity which ran upwards, backwards, and inwards, and which should have been occupied by the vestibule and semi-circular canals. This cavity, after being thoroughly exposed by chiselling away the outer wall, was found to be full of granulation-tissue, amongst which was a sequestrum consisting of part of the vestibule and part of the openings of the canals into the vestibule. When this cavity was cleared it was seen to be bounded posteriorly by dura mater. To the best of my belief the cochlea was not removed. There was no escape of cerebro-spinal fluid at or after the operation.

The anterior inferior meatal wall, both bony and cartilaginous, was replaced by a ragged opening from which pus welled up. The finger introduced passed behind the jaw to a large abscess which pushed the tonsil inwards. A finger in the mouth could easily feel that passed into the abscess. In order to drain this abscess an aneurysm needle was passed to the bottom, and its point then pushed up to the surface of the neck in a line with the mastoid process, when it was cut down upon, and everything between the shaft and the surface was carefully divided until the instrument was free. The large remaining cavities were then stuffed with iodoform gauze, and hot fomentations were applied to the parotid swelling.

Examination of the granulation tissue negatived tubercle.

The recovery was entirely uneventful; the temperature never touched 100° F. A great deal of contraction of the meatus has taken place, and a false membrane has formed across its deeper part.

On January 21, 1907, he left the hospital quite healed. He reported himself on February 21, 1907. He looked well, had resumed work, and had not experienced any trouble beyond the facial paralysis.

The high-pitched whistling tinnitus was replaced by a hiss, which came regularly every two seconds, and was unaffected by carotid compression.

He stated that he heard better than before the operation. Conversational voice, 15 inches; whisper (not forced), 2 inches; acoumeter, 4 inches; Galton's whistle heard throughout; Hartmann's forks also heard throughout. A C 512 tuning fork placed on the vertex was referred to the *right* ear. The same fork gave bone conduction better than air on the *left* side, care being taken that he heard in the left ear when it was placed on the bone, and that it was not really heard in the right. Gardiner Browne's test gave five seconds.

The case is of interest from many points of view. It is extraordinary that such extensive disease should have taken place with such few symptoms, but it must be taken into account that the man is of inferior intelligence; at any rate, the labyrinthine involvement did not cause any violent symptoms, for he was doing his work until four days before admission. The absence of fever is rather remarkable. The chief pain was distinctly located in the left temple. The parotid swelling was probably glandular. The pus seemed to have reached the tonsil straight through the anterior inferior meatal wall. The absence of mastoid signs is accounted for by the anatomical condition, the "infantile" type being present. By "infantile" I mean a diploëtic mastoid process separated from the antrum by a layer of compact bone and a dense outer antral wall—a condition which is due to a persistence of the condition most usually seen in infancy, but on a larger scale.

The case also demonstrates that the vestibule and canals can be removed without loss of hearing—a point which has been previously proved by Ballance in his case recorded in our TRANSACTIONS, vol. i, p. 47, and by Lake in his cases of operation undertaken for incapacitating vertigo without suppuration. The tuning-fork tests were gone through with great care. It will be noticed that Weber's test gives internal results for the left ear, yet Galton's whistle and Hartmann's forks are heard throughout, and Rinne's and Gardiner Browne's tests give middle-ear results. It seems that obstruction to the cochlea, apart from that in the oval window, gives rise to increased bone conduction, except to Weber's test.

Mr. C. E. WEST said he had a closely parallel case under his care—chronic suppurative otitis media, long-standing, with no very distinct history, in a boy aged fifteen. Last Christmas he had severe pain in the side of the head. He did not see him at that time. He came to hospital in February with profuse discharge, partially recovered facial paralysis, and a tongue of granulations

along the floor of the meatus, making it impossible to see the exact condition of the tympanum. It was operated upon, and he had a softened, fœtid cholesteatoma occupying the antrum and tympanum; and when that was cleared away, the whole exterior canal and the upper part of the vestibule were found open, and through the opening a mass of granulation tissue was protruding. The granulations seen in the meatus were found to be attached to the postero-inferior part of the inner tympanic wall, and when they were curetted away the bone crumbled before the spoon. The whole vestibule was cleared out, and a movable mass of bone was found internally. The opening behind was enlarged, and the mass of bone removed by a bent hook through the posterior opening, above and behind the facial nerve, that nerve being left exposed, stretching across from one side to the other. When a probe was passed inwards posteriorly, it was found to be limited by the posterior part of the petrous. The patient was getting on well, and the facial paralysis had nearly disappeared. The sequestrum was very like the one exhibited that day, and included the inner wall of the vestibule, the posterior canal, the inner ends of the superior and external canals, and the posterior part of the internal auditory meatus. Before the operation the boy had no evidence of giddiness, and he walked firmly. He thought there must be a stage in those cases in which there were labyrinthine symptoms, but it was the stage of invasion, before the labyrinth, vestibule, and canals had ceased to be functional organs, not the old stages when the giddiness went off completely, and when uncompensated muscular action had also disappeared, and the patient had recovered muscular certainty again. With regard to suppurations in the labyrinth, the risk was always in the direction of extension along the internal auditory meatus and the meninges; and it seemed necessary to drain the vestibule thoroughly, opening it below the facial canal as well as above it.

Mr. H. A. Ballance desired to offer one or two remarks about the facial paralysis. The facial nerve was destroyed, therefore there was no use in waiting any longer before performing a nerve anastomosis to relieve the palsy. It was now four months since the facial palsy had started, and the ear was dry, and, although there was some eczema of the auricle, that could soon be put right. There was no possibility of the facial palsy getting right of itself, and he thought now would be the time to proceed with the anastomosis. Only two days ago he saw a case of facio-spinal anastomosis, which he had done six years previously, in a woman,

and even after that time there were still associated movements between the face muscles and the trapezius and the sterno-mastoid. When she moved her face the shoulder also moved, and she could not move the shoulder without the face moving also. That was a good reason for undertaking facio-hypoglossal anastomosis rather than facio-accessory.

THIRTY-FIRST ORDINARY MEETING.

Saturday, May 4th, 1907.

THE PRESIDENT, MR. A. E. CUMBERBATCH, IN THE CHAIR.

The following communications were made:

THE INFANTILE TYPES OF MASTOID, WITH NINETY-SIX SPECIMENS.

BY ARTHUR H. CHEATLE.

At birth and in infancy the outer antral wall, formed by the squama, is composed of a thin outer layer of compact bone and an inner layer of fine cells. The mastoid mass, formed by the petrous, is, as a rule, diploëtic, and separating the mass of diploë from the cavity of the antrum there is frequently a thin, but distinct, layer of compact bone (Fig. 1). The mastoid diploë may be scraped away, leaving the separating layer.

These conditions frequently persist all through life, though on an enlarged scale, forming one of the types which I have called "infantile." The outer antral wall becomes much thickened, and of ivory density, but the inner layer of fine cells remains distinct. The dense squamous part of the mastoid process is often sharply marked off from the petrous part. The mastoid process is still diploëtic, and the separating layer of compact bone is much increased in thickness. No mastoid cells form (Figs. 2, 3, 4). Very rarely the mastoid mass in infancy is formed of very dense bone, with little or no diploë (Fig. 5), and this condition may persist, forming a second type of "infantile mastoid" (Fig. 6).

These ninety-six specimens have been picked out from a collection of 500 normal bones.

The importance of recognising that these types exist so frequently is of much surgical importance, for: (1) Suppuration is unable to reach the mastoid process or to perforate the outer antral wall; (2) the external signs of acute empyema of the antrum may be absent or slight; (3) extension of infection is more likely to extend intra-cranially or to the labyrinth. The posterior

PLATE I.

Fig. 1.—Right Bone of a Male aged Nine Months.

Fig. 2.—Right Bone of a Male aged Forty-four.

To illustrate Mr. Arthur Cheatle's communication to the Otological Society of the United Kingdom, May 4, 1907.

Adlard & Son, Impr.

PLATE II.

Fig. 3.—Right Bone of a Male aged Forty-two.

Fig. 4.—Right Adult Bone.

To illustrate Mr. Arthur Cheatle's communication to the Otological Society of the United Kingdom, May 4, 1907.

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PLATE III.

Fig. 5.—Right Bone of a Male aged Seven Months.

Fig. 6.—Right Adult Bone.

To illustrate Mr. Arthur Cheatle's communication to the Otological Society of the United Kingdom, May 4, 1907.

Adlard & Son, Imp.

wall of the antrum is sometimes very thin and translucent, and has the cerebellum on the lateral sinus or both lying against it; (4) the lateral sinus, more frequently than in cellular mastoids, occupies a forward position (total 38); (5) the most extreme forward position of the sinus is found under these circumstances; (6) the greatest thickness of the outer antral wall is seen in these types; (7) the cavity of the antrum is usually small; (8) the difficulty in operating on these types is obvious, and is enhanced if the antrum occupies a high position, and if the lateral sinus is also forward. A dense outer antral wall is not always associated with a diploëtic mastoid.

It seems, looking back over the cases in which one has performed the radical operation, that the infantile type has been very common. May the anatomical condition account for the persistence of discharge owing to the inability of the pus, in the acute stage, to find vent through the mastoid cells?

Dr. Adolph Bronner suggested that Mr. Cheatle should have stereoscopic photographs made of the most typical cases. Such photographs would be of great use to all the members.

Dr. Dundas Grant congratulated Mr. Cheatle upon his monumental work, which was too huge to discuss the first time of hearing. He asked whether Mr. Cheatle could confirm the description given by Symington, in his work on the anatomy of the child, to the effect that the antrum in the infant was close to the surface, and that a deposit of dense bone formed on the surface of it, which was at its thickest at about twelve years of age, and then became gradually hollowed out as the patient got older. That description had probably been founded upon fewer specimens than the present series of Mr. Cheatle's, but Dr. Grant's experience in operating seemed to be confirmatory of what Symington said: that in boys at about the usual public school age it was comparatively difficult to enter the antrum, which then lay under a considerable thickness of dense bone. In acute cases, when he had seen unfortunate results, it was chiefly at that age. Bezold had pointed out that acute mastoiditis subsequent to suppuration in the middle ear was most common when there were large pneumatic spaces, which invited suppuration, but this was comparatively easily dealt with. When suppuration took place in the infantile type, however, it was more difficult to deal with, and possibly, for mastoids of this type to be affected, the disease was more virulent in its nature, and the results were, on this account, proportionately less satisfactory.

Mr. E. B. Waggett: The specimens compelled one to ask

whether there was really such a disease as osteo-sclerosis of the mastoid process. Was there any pathological evidence of it?

The PRESIDENT thought the series a very interesting one, as explaining the difficulties which were constantly met with in operation. When, in operating, the bone was found very dense, it was usual, years ago, to speak of it as due to osteo-sclerosis. When the Society's Museum was started he hoped Mr. Cheatle would present a number of those specimens to it. When he (the President) was a demonstrator of anatomy, the views held concerning the proportion of pneumatic to dense bone, at different ages, were very different to those now held, thanks to Mr. Cheatle's researches.

Dr. URBAN PRITCHARD said the specimens had cleared away from his mind any idea of osteo-sclerosis of the mastoid process.

Dr. BRONNER said that osteo-sclerosis was generally recognised only to occur in diseased bone, or, at all events, chiefly there, but the specimens shown were normal. Where chronic otitis occurred there certainly was often osteo-sclerosis, but there were very few cases of osteo-sclerosis without suppuration. The normal specimens shown were apparently not cases of osteo-sclerosis at all, but a definite diagnosis could only be made by the help of the microscope. Macroscopic appearances were of no scientific value at all.

Dr. MCBRIDE thought that before such a statement went out from the Society that there was no such thing as osteo-sclerosis members should make sure there was not. Mr. Cheatle's collection had gone far to show that there could be within the limits of the normal a condition in which what used to be known as osteo-sclerosis occurred. He thought, however, that there was not any justification for at once discarding that term. He would like to hear whether anyone had shown that there was no histological difference between cases of osteo-sclerosis as found in prolonged suppuration and those now exhibited.

Mr. CHEATLE, in reply, said, in answer to Dr. Grant, he did not think there was any difficulty in a child of twelve; the child was growing, the antral wall was getting thicker, but he did not think there was particular difficulty in getting into the antrum. What had been described as osteo-sclerosis was a normal condition, and he had seen hundreds of specimens of suppuration, but nothing which would make him think that osteo-sclerosis was due to suppuration. Those bones which had been described as osteo-sclerotic were simply cases of suppuration in which the infantile type was present.

Electric Oto-masseur giving 3000 to 18,000 Vibrations per Minute.

By Richard Lake.

Mr. Waggett raised the question as to whether there was sufficient care exercised by instrument makers as to the sale of such machines with a rapid vibration. He thought they were dangerous things to supply to the public without the aurist carefully testing them upon himself. It was important that the stroke of the piston should be small—about one tenth of the adjustment which was on the present machine—and he knew there was at least one case of detachment of retina by the use of a vibratory machine. He thought such instruments should not be sold except through authorised persons.

Dr. Milligan asked what Mr. Lake's experience was with regard to the effect of the instrument upon the auditory nerve? He wondered whether it had any deleterious effect upon its function. He could imagine it would have a beneficial effect on the structures of the middle ear, but such rapid rarefaction of air in the meatus might injure the nerve.

Dr. E. Law said the instrument appeared to be an excellent vibrator, but suggested that it would be beneficial to warm the air and, if possible, lessen the noise. He asked what Mr. Lake's experience was in the use of such an apparatus on old people. In two such cases in his practice it had produced permanent tinnitus. He believed that had been other people's experience in some patients who had not previously complained of noises.

Dr. McBride asked whether any one present had found the use of such an apparatus of real and permanent value? He was aware that many people who used them believed they were benefited by them. He possessed an apparatus, but not with such rapid vibrations, and had used it on many patients, but the best that he had found was the production of a little good temporarily. He had never seen sufficient benefit to justify him in asking the patient to come back and have it repeated. He had seen a hand apparatus act beneficially on tinnitus, but it had not permanently benefited the hearing. Now that so much was known as to the pathology of sclerosis he did not see how one could expect such cases to be improved by vibration. Even in advanced chronic middle-ear catarrh one was not likely to get much further by its use.

Mr. Hugh Jones asked whether there was any evidence that an extremely rapid vibration was better than one of a lower rate?

His experience was that the ordinary hand vibrator of slower rate, supplemented occasionally by one of 2000 vibrations per minute, lessened tinnitus somewhat, but caused no improvement in hearing.

Mr. Cheatle asked whether any member had ever found in any patients any permanent good from any vibration of any magnitude? His own answer to the question was in the negative.

The President said he saw a patient a short time ago who was advised by a distinguished artist to procure an American vibrator, the gentleman having found benefit from its use. The patient came to the President in a great state of mind because of the whole tone and quality of sound having been altered since using the instrument; everything he heard had an irritating twang.

Dr. Grant said his experience of such instruments had been very mixed. He had used a very gentle vibrator (Noebel's), a cheap hand instrument. The multiplication of frequency was brought about by means of a band, and there was a form which could be fixed on to a sewing machine. He thought such instruments should be as noiseless and gentle as possible. The evidence given him was that in some cases such a machine diminished tinnitus. Gentleness was of the utmost importance. Some of the noisy instruments so much advertised, and which were held over the ear, he thought had done mischief in some cases, and such patients had come to him on this account. On the other hand, there were some patients who insisted that they had derived benefit from them. He had tried to employ vibration without inducing noise by placing the vibrator against the spine. The patient could distinctly feel it shaking up the bones of the head. The use of the instrument could only be experimental in each case, and he feared that most frequently it did not relieve, though in some cases it did.

Mr. Secker Walker said that a few years ago he used the otomasseur a good deal, and several patients felt that they were benefited by it for a short time, but he gave up its use when he found no permanent good resulted. Some patients considered that the use of the masseur made them worse.

Mr. Waggett said he had some patients who were improved by it, and were kept up to a high level by its use; they were cases of old secondary sclerosis.

Mr. Lake, in reply, said that if he dealt fully with the questions asked him it would be necessary to give definite data, which he had not brought, and therefore full replies would be without value. He had never yet seen a permanently bad result in any case in his

own care, because the great point was that when increasing the pace the length of the stroke should be lessened. The primary indication was where there was not a freely-moving malleus. Any obvious nerve-lesion was not suitable for it. The instrument was most distinctly useful when combined with other treatment. His own opinion on the matter was so strong that he was prepared to look up a series of cases, and if anyone wished it he would give some definite results. The air could be easily warmed. With regard to Mr. Waggett's statements that an auto-masseur had produced detachment of the retina, he believed Mr. Waggett had been misinformed. He believed the accident happened through using a vibrating massage instrument at the base of the skull.

A Case of Extra-dural Abscess; Operation; Recovery.

By Charles G. Lee.

On the evening of August 13, 1906, I was consulted by a gentleman, Mr. J—, aged thirty-five, who had been sent to me by Dr. Paterson, of Grassendale. There was a history of discharge from the right ear in infancy; during childhood a polypus had been removed from this ear at the Liverpool Eye and Ear Infirmary; shortly afterwards the discharge ceased, until the last twelve months, when it re-appeared. The ear was syringed, but no medical advice was sought until last month, when Dr. Paterson was consulted; an interval of a month again elapsed before the patient again saw Dr. Paterson; the symptoms were now so grave that the patient was sent for special advice. When I saw the patient about 8 p.m. he appeared very ill, had an anxious expression, complained of severe headache, situated chiefly at the base. The temperature was 101° F., pulse 100.

The right external meatus was almost filled by a large, soft granulation polypus; pus was escaping from the sides, and considerable quantity was readily expressed by the fingers applied to the outside of the auricle. There was no tenderness nor any swelling over the mastoid behind, but pressure at the apex produced considerable pain.

The patient was urged to submit to an operation without delay, and arrangements were made for his admission into a private nursing home. When this was done, on August 15, two days after our first interview, the Lady Superintendent of the Home informed me that he was so giddy as to be unable to stand without support; complained of great headache, vomited, seemed

apathetic, and thought he was going to die; the temperature was 102° F.

August 16.—Morning temperature 99·8° F. Ether and chloroform were administered by Dr. Hurter, Mr. Malcolm Stockdale assisting me with the operation. The usual incision as for post-aural operations was made, and when the periosteum had been removed from the osseous surface, a large sinus was disclosed, leading in an upward and backward direction.

This opening was followed up and its calibre increased; chisel and burrs, the latter being driven by a hand motor, were employed for this purpose. The bone was freely removed; finally the antrum and tympanum were thrown into one continuous channel with the original fistula.

During the proceedings it was discovered that the greater portion of the roof and posterior wall of the antrum was absent. A large quantity of very offensive pus escaped, and cholesteatomatous material was removed. The dura underlying and covering the petrous was quite yellow. The parts were freely douched with boric lotion, glycerine of carbolic acid applied, and the cavity lightly packed with iodoform gauze. The external incision was closed with sutures.

The patient had a very restless night, and was in great pain. Temperature 100·6° F. On the 19th temperature reached 102·8° F. Dr. Paterson saw him with me, and we feared the onset of meningitis; but fortunately our fears were groundless, for he gradually, but steadily, improved. The headache faded away, temperature became normal, and his look of misery gave place to one of serenity and cheerfulness.

It was found necessary to dress the wound daily for some three weeks, owing chiefly to the tortuosity of the channel in the bone. He left the nursing home on September 14, and is now quite well.

This case would appear to be one in which the invasion of the organism was early directed to the bony structures; shortly, however, the attack included the meningeal, and had it not been for surgical interference at this juncture, doubtless the underlying cerebral tissues would have been, in their turn, subject to assault.

Otitis Media Chronica; Sinus Thrombosis; Excision and Obliteration of Sinus; Recovery.

By Charles G. Lee.

On Saturday, October 12, 1906, I was requested by Dr. H.

Freeth of Llangollen, to come and see a child suffering from ear trouble, and, if it should be judged necessary, to be prepared to operate.

Accordingly, the next morning, accompanied by Mr. Stockdale and a nurse, I went to Llangollen. We all saw the patient together and found a girl, aged ten, sitting up in bed, cheerful, free from pain, normal temperature, and who volunteered the information that she was quite better—an opinion that was shared in by her parents.

There was, however, an offensive discharge from the right ear, and some tenderness over the mastoid region on the same side.

The history supplied was as follows: the girl had had no trouble with either ear until she was three and a half years old, when she underwent an operation for the removal of adenoids; shortly—some few weeks—afterwards a profuse discharge commenced from both ears.

No particular treatment was adopted, nor was much attention paid to the discharge until October, 1906; the child was now in her tenth year, and the discharge had been in existence some six and a half years, disappearing and recurring from time to time.

This brings us to Monday, October 3, 1906. The child stated that she had been accidentally knocked down in the school playground. Tuesday she remained at home, complaining of headache and pain in the right ear.

Wednesday, October 5.—On this day headache was severe; she vomited her breakfast, and Dr. Freeth was consulted. Temperature 101° F. As she had been constipated since Monday an aperient was prescribed. Thursday.—Seemed much better, no headache; temperature normal. Friday.—Headaches recommenced, rather drowsy; temperature higher. Saturday.—Rigor in the morning, increased drowsiness and photophobia.

With this history, despite the apparently improved condition, and although the proposal to remove the child to Liverpool was discussed, it was thought wiser to at least investigate the condition of the antrum then and there. Dr. Freeth administered chloroform, which the patient took quite satisfactorily, and as soon as the cortical layer of the mastoid had been removed with the chisel a large quantity of very fœtid pus escaped through the bony structure in spurts. On removal of the deeper layers of bone, appearances became complicated by an extra-dural hæmorrhage, the blood having coagulated in the groove of the sigmoid sinus, and separated the sinus from the bony channel; so deceptive was

the state of things that some time was spent in ascertaining whether or no we had already opened a thrombosed sinus.

The wall of the sinus, evidently on the point of sloughing, was quite yellow, but this discolouration of the dura was found to be strictly localised to the line of the sinus. This is in strong contrast to a case I have quite recently seen, in which after plugging of the sinus, and ligation of the jugular, a large cerebral hernia occurred some days after the operation, coming through the dura near the site of the sinus.

An incision into the vessel showed that it was occluded by an unhealthy-looking clot; it was therefore determined to lay the sinus open and remove the clot. In order to afford free access and better opportunity to deal with the diseased structures, considerably more than two inches of bone in the course of the sinus and in the direction of the torcular was now removed, well beyond the discoloured area.

From the lower end all the softened clot was removed with a scoop, until free oozing of what seemed healthy blood followed.

At the upper end a control plug was placed between the bone and the wall of the sinus; and after removing with scissors all the discoloured portion the scoop was again employed to remove clot; this was instantly followed by a most profuse hæmorrhage; thanks to the external plug, and another of cyanide gauze packed into the lumen of the vessel, this was stayed.

The shock of the operation having told somewhat severely on the patient, it was judged wiser to leave the complete operation to a later date.

A dressing of gauze was firmly applied, and the child passed a fairly comfortable night; henceforward the symptoms improved. By the third day after the operation the dressings had become offensive, and Dr. Freeth thought it better to remove the external ones without, however, disturbing the plugs in the vessel.

Saturday, the 15th, six days after the operation, we saw the patient again, and the plugs were now removed; when the compress from the upper end of the wound had just been lifted out a smart hæmorrhage came on, but this was controlled without much difficulty. The temperature was normal, and the general condition satisfactory.

I did not see the patient again until February of this year, when she came to Liverpool; and I found, to quote Dr. Freeth's description contained in a letter, "The little patient is now in a splendid condition, she has markedly put on flesh, she is bright

and happy, and has no headaches. The wound behind the ear has solidly healed."

Chronic Suppurative Otitis Media, Lateral Sinus Thrombosis, Cerebro-spinal Meningitis, Pneumonia due to Staphylococcus pyogenes aureus.

By Charles G. Lee.

Ellen D—, aged twelve, was admitted into the Liverpool Eye and Ear Infirmary under Mr. Lee's care on August 28, 1906, with the history that she had been ill for about three weeks, suffering with great pain in the head, accompanied by a discharge from both ears.

The parents attributed her illness to the result of a blow over the ear which she had received the day her illness commenced; as they stated previously she had had no discharge or any trouble with her ears; this latter statement, however, was untrue, as the patient herself stated on the day after admission into the infirmary that as a small child she had suffered from a discharge from the left ear, but that the discharge had entirely ceased until two weeks ago, when, after the injury already referred to, it made its reappearance.

Day of admission.—Temperature 103° F.; pulse 120. August 29.—Temperature again 103° F. Left tympanic membrane completely destroyed; offensive purulent discharge. Several large flabby granulations in meatus. Well marked double optic neuritis.

Peroxide of hydrogen, carbolic lotion, and glycerine of carbolic acid were employed to-day—August 30.

Rigor with temperature of 105·6° F.; 9.30 p.m. post-aural operation. Mastoid sclerosed.

Antrum very small; groove of sinus full of pus, bone in course of sinus extensively removed and the vessel well exposed.

There was no direct communication between antrum and sinus, hence infection probably spread through small veins.

The sinus wall was cleansed with 1 in 20 carbolic acid, and needle introduced into sinus through which watery-looking blood escaped; the condition of tympanum and antrum as disclosed did not show marked pathological changes.

Following the operation the temperature fell to normal, and remained down for twenty-four hours, when, after a slight rigor, it rose to 101·4° F.

September 1.—As I was leaving town for annual holiday Mr.

Stockdale proceeded to investigate the internal jugular, and he has kindly furnished me with the following description of the operation. Henceforth I am quoting Mr. Stockdale:

The skin having been prepared an incision was made over the anterior border of the sterno-mastoid, extending from the apex of the mastoid to the upper border of the thyroid cartilage. The platysma was incised, the anterior border of the sterno-mastoid defined, the deep fascia opened, and the muscle drawn outwards with a retractor. The fascia beneath was tough and infiltrated with inflammatory products, especially along the line of the vessels, the sheath also being surrounded by a mass of inflamed lymphatic glands.

On opening the outer side of the carotid sheath the internal jugular was found to be collapsed, its wall being represented by a yellow slough.

The incision in the skin and deep fascia was then carried down to a little below the cricoid cartilage and the vein exposed to lower limit of incision.

Below the level of the hyoid bone the wall of the vessel appeared normal in colour, although empty and collapsed.

The facial vein was prominent and appeared thrombosed about its last half inch.

Owing to the infected condition of the jugular and its surroundings, and having in recollection a previous case in which the internal jugular was ligatured about the level of the cricoid cartilage, and in which, after division, the lining membrane appeared healthy, but later, however, at the autopsy it was found that the infection had extended along the inner coat of the vein to the right innominate, it was thought advisable to excise the vein fully, so now the incision was extended to just above the inner end of the clavicle. The sterno-mastoid being firmly retracted outwards and the omo-hyoid downwards, the internal jugular was divided between two silk ligatures about half an inch above the clavicle, and dissected out from below upwards. Above the posterior belly of the digastric was drawn up, and as much as possible of the sloughing vein was removed. The facial vein was ligatured about one inch from its termination. The lower end of the wound was sutured and the upper packed with cyanide gauze.

At this stage of the operation, the patient's condition became serious and a slight rigor occurred. However, the sinus was dealt with; bone was removed along line of sinus with cutting forceps; on opening the sinus itself it was found to contain

granulation tissue and clot, especially at its bend. No hæmorrhage from lower end; upwards the vessel was opened until free hæmorrhage occurred; both ends were now packed with iodoform gauze.

The temperature continued irregular on September 5; no rigors.

September 6.—More bone removed, plug taken out, a little pus escaping. Sinus slit and clot removed until free bleeding again occurred, which was arrested by packing.

September 12.—Up to this the wound had been dressed daily, and on the last three occasions portions of plug were removed from upper end of sinus; to-day, when the last fragment was removed, free oozing of blood occurred.

Henceforth, with the exception of two occasions when for two or three days some improvement of symptoms appeared, the case appeared to be getting more hopeless. To increasing intensity of the optic neuritis vomiting was added, headache became worse, severe attacks of pain in the left leg, so severe as to require morphia.

A comatose condition gradually came on, and the patient lingered until November 3, when the termination came.

Post-mortem (*November* 7, 1906).—Body extremely emaciated. Linear scar over anterior border of left sterno-mastoid extending from apex of mastoid process to just above inner end of the clavicle. There was a scar in the region of the original post-aural incision; from this a depressed cicatrix, following the line of the lateral sinus, extended to about midway between the mastoid process and the external occipital protuberance, which presented a small granulating surface about its centre.

The calvarium having been removed, the dura, although normal in appearance, was under considerable tension. After the dura had been reflected the surface of the brain was found to be hyperæmic, with yellow streaks here and there following the course of the veins; scattered over the surface were numerous circular yellow areas, somewhat raised, some minute, but others as large as a shilling (localised meningo-encephalitis). On removing the brain the base of the skull contained a considerable amount of thick pus with yellow flakes floating in it, which extended into the spinal canal. The optic nerves were bathed in pus, and on section appeared distinctly pink in colour.

The under-surface of the brain was covered with thick, purulent material, extending from the optic commissure to the cerebellum. All the ventricles were filled with thin, purulent fluid, in which yellow lymphy flakes floated.

The sinuses.—The remnant of the left lateral, which consisted of about the upper two inches, was occupied by a disintegrated clot, which extended into the straight sinus and along the veins of Galen into the ventricles. The infective process did not involve the opposite lateral sinus, and the other sinuses were normal.

The left internal jugular vein was represented by a tube less than an inch in length, extending upwards from the innominate.

The pericardium contained a considerable amount of fluid, which, on standing, yielded a purulent deposit.

The heart itself and large vessels showed no pathological changes.

The lungs.—On right side a few adhesions between the two layers of the pleura. The left, extensive adhesions, which extended almost over the whole surface. Nodular patches of consolidation were scattered through the substance of the lung. Other organs normal.

Fluid, obtained by lumbar puncture and incubated on agar, yielded a pure culture of *Staphylococcus pyogenes aureus.*

In considering these three cases the first requires but brief comment; it is an example of a class which the advance of aural surgery enables one to treat with confidence and success. With regard to the second and third cases there exist some features common to both that may merit a moment's notice.

(1) The patients were both young girls.

(2) The onset of the serious symptoms was in each case immediately subsequent to a direct injury applied to the outside of a previously diseased ear.

Is it possible that, owing to the rupture of vessels hitherto dormant, micro-organisms received more invigorating pabulum, and so become active and malignant? MacEwen has pointed out the dangers that may attend removal of aural polypi, and from the above cases it would seem that some slight violence applied to an old-injured ear may have equally serious consequences.

Additional interest attaches to the third case from a forensic point of view.

The third feature shared in by each of these patients was that the vascular structures were those involved most seriously.

Finally, the second case proves that ligature of the internal jugular is not always obligatory, or even desirable, when serious disease exists in the sinus.

Dr. Milligan said the point raised by Mr. Lee was of great

importance, namely the effect of a blow when there was an already existing disease of the ear. A few years ago he was in court for two days in connection with a case of the kind in which an action was brought by a parent against a school mistress for boxing a child's ear. The action was defended by the National Union of School Teachers, and from the point of view of the assailant it was an important matter. The charge was that the blow had created the disease. He was called into the country to see the patient, and at that time there was incipient mastoid disease, and in addition old-standing middle-ear disease. He could not say that the blow had had nothing to do with aggravating the existing disease, but there was no doubt that the blow did not cause the disease. The tendency was to greatly exaggerate the injury done by a blow on the ear, and parents naturally had an exaggerated idea of the amount of force used. It was often difficult for the medical man to state that a blow had aggravated existing mischief.

Dr. Jobson Horne said that as otologists they must be agreed that boxing children on the ears was a practice not to be encouraged, whether it produced disease or not. If it went out from the Society that it was a detrimental practice, and injurious to a child's hearing, it might be a means of bringing school teachers to recognise that there were other ways of correcting children.

Mr. Sydney Scott thought that if Dr. Horne's suggestion were carried out it would lead to a great deal of litigation, and more harm might result than was intended. Unless there was direct evidence of ruptured membrane in a previously healthy ear, and of secondary infection, one could not say that boxing a child's ears had caused the condition which Mr. Lee described in his cases. His opinion was that such an injury produced in this way was excessively rare.

Notes on the Frequency of Marked Hypertrophy of the Pharyngeal Extremities of the Eustachian Tubes, with Analysis of Fourteen Cases.

By James Donelan.

It is, perhaps, unnecessary to remind the Society that the first instance of which we have a record of marked hypertrophy of the pharyngeal extremity of the Eustachian tubes was the interesting case shown here last year by Dr. Furniss Potter. It had been exhibited by him several months previously at the Laryngological Society, and on that occasion I expressed the opinion that the con-

dition was a comparatively common one, and that while it was one of the commonest causes of error in the diagnosis of nasal obstruction from adenoids, it had been entirely overlooked in the literature. I was rather startled at the incredulity with which that view was received by most of those who took part in the discussion, and I began to think I had had a somewhat unique experience. However, when the case was shown here, the remarks of Dr. Edward Law, and of others who took part in the discussion, showed that the condition was one with which they were well acquainted. My recollection of the matter was revived during February by meeting a well-marked case in private practice occurring in a girl, aged nine, who had the characteristic adenoid appearance, chronic hypertrophic rhinitis, and slight Eustachian deafness with intact membranes.

On looking through the cases of the Italian Hospital from the beginning of October, 1902, to now, I find the condition noted in fourteen cases. The ages of the patients varied from three to twenty-two years—ten males and four females. It may seem a very small number, but the interesting point is that ten of these cases had been sent for operation for adenoids by medical men accustomed to recognise the signs of naso-pharyngeal obstruction. In only four cases there were a few small adenoids, in the rest none. The hypertrophy in all cases was so marked as barely to allow the finger to pass between the swellings. In one case they extended forward to the pterygoid plates. There was double chronic suppurative otitis in one child, aged three, and unilateral suppuration in another, aged nine. In the latter the hypertrophy existed equally in the opposite side. In one case—a woman, aged twenty—there was ethmoidal suppuration and polypus on the left side, and in one ethmoidal suppuration on both sides. It is somewhat remarkable that no case was met with over twenty-two years of age. I have also seen a private case in which the abnormality was complicated with cleft palate, whereby an excellent view of the condition could be obtained. The condition associated with almost all the cases was general hypertrophic rhinitis, with a long history of catarrh; for instance, in the child of three the catarrh had lasted from birth. This is, of course, too small a group of cases on which to base an opinion as to the causation, or even the relative frequency, but, as far as they go, it would appear, as seems, indeed, most likely, that the condition is caused rather by disease of the naso-pharynx than of the tympanum, and that if otitis is present it is also a consequence.

If other members, with larger clinics, were to collect their cases, it might be possible to arrive at some conclusion. As regards treatment, I have not attempted any, though I have gathered, in conversation from some members of the Society, that they have, in one or two instances, removed these hypertrophies without any bad effect on the hearing.

			Age.	Remarks.
1902	Oct. 8	W. F—	5	Slight deafness R. and L.; no adenoids.
1903	Jan. 21	D. D—	11	No adenoids.
	Mar. 4	L. P—	19	Hypertrophy extended to pterygoid plates on both sides.
	July 22	C. L—	14	Few adenoids.
	Sept. 22	R. Z—	5	No adenoids.
1904	April 20	E. B—	17	Marked hypertrophy; no deafness.
	June 15	M. A. C— (F.)	17	Few adenoids.
	Oct. 12	J. S—	14	No adenoids.
1905	Mar. 15	D. B— (F.)	20	Ethmoidal suppuration and polypus.
	Nov. 3	Isidore	3	Double suppurative otitis; no adenoids; deaf and dumb.
	Dec. 8	C. D—	22	Deafness.
1906	April 4	A. L—	4	A few adenoids.
	April 26	L. A—	9	R. ch. sup. otitis.
	May 3	C. B—	4	No adenoids.
1907	Jan. 1	E. H— (F.)	9	R. and L. ethmoidal disease; marked deafness.
	Feb. 26	B. T— (F.)	9	Slight deafness.

Dr. McBride asked why Dr. Donelan used the term hypertrophy? How did he know they were not congenitally enlarged? He (Dr. McBride) used posterior rhinoscopy in all his ear cases, and it was not often that he could not see the choana and Eustachian orifices, and he had been struck by the enormous variations in size. In some cases there was not only a large Eustachian orifice but a posterior margin was granular. He had seen that in cases where adenoids had been previously removed. The important point was, that given such a case, could one do very much? He thought far the larger proportion of apparent hypertrophies were really congenitally large orifices. Had Dr. Donelan excluded that possibility?

Mr. Waggett thought it would be important also to take the

dimensions of the skull, because in many cases the Eustachian cushions were close together, without being enlarged, when the choanæ were narrow.

Dr. Bronner thought the question was important in relation to adenoids. Most people had adenoids more or less. When operating for adenoids it was usual not to touch that region at all. It was his former practice to use Hartmann's curette, which cut sideways, but he thought it a dangerous instrument, because one might remove part of the Eustachian tube. In one or two of his cases he did find a small ring of cartilage which came from the Eustachian orifice, although he had seen no bad results. He now used Meyer's ring-knife, and scraped that region. He had proved by examination, after operation, that in those cases where there was recurrence of deafness the upper part of the pharynx might be normal, but there were a few adenoids in the region of the Eustachian tube. In all cases of adenoids he thought Meyer's ring-knife should be used in that region.

Dr. Milligan thought that prominent Eustachian tubes were not uncommon. He had practised on much the same lines as Dr. McBride, examining, as far as possible, every naso-pharynx, and had seen a number of unduly prominent Eustachian tubes. He did not regard them as hypertrophies, but simply as congenital conditions. When a prominent Eustachian tube projected into the post-nasal space he had found a certain amount of loose, soft tissue behind, but never enough to give marked trouble.

Dr. Jobson Horne remembered a case shown by Dr. Furniss Potter before that Society, in which the unusual size of the pharyngeal extremities of the Eustachian tubes was very exceptional.

Mr. Herbert Tilley also remembered Dr. Potter's case, and said most of them would look upon such a case as an object of great curiosity. He believed Dr. Donelan was referring to that class rather than to the smaller enlargements, which would be scarcely striking or out of the common. Mr. Tilley thought they must be congenital in origin.

Mr. Richard Lake said he could recall about three cases of large Eustachian tubes, and in all of them there was middle-ear deafness. Therefore he thought at one time it was partly a pathological condition. He had wondered what would be the effect of removing one or both of those enlargements. The only danger seemed to be that of stenosing the orifice afterwards. He believed he would have removed it if he could have seen his way clearly.

Mr. Hugh Jones said the only case he had seen besides Dr. Potter's which had been mentioned was one quite recently, in which there was a very marked difference in the size of the tube orifices. One orifice was nearly half as large again as the other, and there was a corresponding difference in the size of the cushion. He did not know whether that difference threw any light on the question of hypertrophy. The choanæ were hidden all but a narrow chink on either side of the vomer.

Dr. Donelan, in reply, said he was sorry he used the term "hypertrophy," as that seemed to offer an answer to his query as to the cause of the enlargement. He did not suggest any of his cases were as remarkable as that of Dr. Furniss Potter, which latter was the most remarkable he had seen. All his common cases had been examined under an anæsthetic, and all of them felt as large as the sea anemones of these latitudes. Probably, as Dr. McBride suggested, they were of congenital origin. If he could bring the child and cleft palate case he would.

Notes of a Fatal Case of Acute Left Mastoiditis and Purulent Thrombosis of the Lateral Sinus; Radical Mastoid Operation; Evacuation of Thrombus; Ligation of Internal Jugular.

By James Donelan.

The patient was an Italian youth, aged eighteen. There had been for eight or nine years left suppurative otitis following scarlatina. He had had influenza for ten days, and apparently acute mastoid abscess for a week before admission. When seen it was decided to open the mastoid by Stacke's method. The antrum was filled with pus, granulations and cholesteatoma. The patient felt much better for the first twenty-four hours after the operation, but next day had a return of vomiting and vertigo, as well as some rigors, the temperature, which had fallen to 99·2° F. rising to 102·8° F. The sinus was now opened, the overlying bone having been removed by a flat gouge as far as the torcular, and as far as one could trace the descending portion. It was found occluded by a convuluted thrombus full of pus for about one inch, in immediate relation with the mastoid cavity. The sinus having been cleared it was packed with iodoform gauze; the wound was left open and dressed.

In view of the pus in the sinus, and with a view to lessening as

much as possible the danger of septicæmia, I requested Mr. G. L. Cheatle, who kindly assisted me with the operation, to ligate the internal jugular, and he did so. No thrombus was apparent in the vessel as far as it could be traced upwards. The patient went on very well for three days, but on the fourth day he had a rigor with acute pain in the right side over the ninth and tenth ribs in the nipple line with dulness on percussion over the lower third of the right lung. There were no signs of pleural effusion. The complication was considered to be pleuro-pneumonia following the previous influenza. On the following day (Sunday) the temperature continued to range between 102° and 103° F. On Monday the patient felt much better; the temperature had fallen to 101° F., and remained at about that figure during the day; the respirations had, however, increased in frequency (at times forty per minute); the area of immovable dulness, however, remained unchanged. I was unable to visit the patient next day, but was informed his condition was unchanged. On the following day he suddenly collapsed, the temperature fell rapidly, and he died somewhat unexpectedly.

The autopsy showed normal brain and meninges. The incision in the neck had healed by first intention. The lateral sinus at both ends was occluded by healthy organised thrombus, and the mastoid cavity had begun to granulate healthily. The right pleural cavity was filled with serous fluid, which was cloudy towards the dorsal region but contained no evident pus. The collapsed lung showed towards the border of the inferior lobe four or five small infarctions.

Though I had not seen the patient for twenty-four hours before death I think the pleural effusion formed rapidly in the last twelve hours of life. I have found Italians of the working class extremely liable to sudden extensive pleural effusions.

The question I desire to submit to the meeting is: Ought I to have suggested the ligation of the internal jugular, or ought I to have been content with disinfecting the sinus as far as possible? Up to the present I have operated in forty-nine cases of mastoid abscess. In four of these death took place from septicæmia. I have opened and cleared the sinus in four cases of thrombosis; two of these recovered. The other two are the present one and one in which I ligated the jugular myself, and both died of pulmonary infarction. I have had no death when the operation was one of election and not performed for acute symptoms.

Temporal Bone from a Case of "Fracture of the Base of the Skull." Remarks upon Prognosis so far as the Power of Hearing is Concerned after Fracture of the Base.

By W. Milligan.

The patient, a man, aged fifty, was admitted to hospital at 1 a.m., upon Tuesday, April 9. On admission the patient was very obstreperous, but rapidly became comatose, and remained in a comatose condition until 11 a.m. upon the same day, at which hour he died. On admission blood was trickling from the right ear. According to the statement of the ambulance man when the patient was first picked up the hæmorrhage from the ear was very copious. The history given was that the patient, who was intoxicated, fell down a flight of five stairs on to the top of his head. The right membrana tympani was found to be ruptured. There was no facial paralysis.

The *post-mortem* examination revealed the following state of affairs:

Brain, etc.—There are signs of hæmorrhage from the right ear and nose. The scalp tissues and temporal muscles contain effused blood. There is very extensive subdural hæmorrhage, the hemispheres being covered with a layer of blood-clot. In the region of the right lateral sinus there is a large extra-dural blood-clot. The hæmorrhage has occurred chiefly from the right lateral sinus. There is also some hæmorrhage under the pia mater. The right temporal bone is fractured, the fracture involving the middle ear and the external auditory meatus. The fracture extends upwards and backwards, in the squamous portion, passes backwards into the occipital bone posterior to the lateral sinus and through the lateral sinus back to the petrous portion of the temporal.

Thorax.—The subcutaneous adipose tissue is very large in amount. The costal cartilages are very extensively ossified.

Lungs.—Œdematous.

Heart is large; the ventricular walls are relaxed and rather soft; there is some atheroma of the aorta.

Abdomen.—There is a very large amount of fat, both subcutaneous and within the abdomen.

Liver is enlarged, weight 5 lb. 2 oz. It is of a pale yellow colour, owing to very extensive fatty change.

The other abdominal organs appear normal.

The prognosis, so far as the power of audition is concerned, is a very important matter in those cases where recovery after

the accident takes place. So far as his experience went it led him to believe that it depended upon the extent and character of the initial lesion. Cases of even severe auditory concussion were frequently recovered from, but where there was evidence of a gross lesion in the middle or internal ears it always appeared to him very problematic how much, if any, hearing would be regained. Time, and, to a certain extent, treatment, were important factors in arriving at any definite conclusion.

Dr. McBride said the question was of great interest to him just now, because of a case he had recently examined. One sometimes saw patients with a history somewhat as follows: A man had a fall or blow, which might or might not have fractured the base of the skull with or without unconsciousness. Possibly the patient had gone to bed for a time, and when first getting up was giddy. His hearing was either impaired or gone. His impression as to prognosis in such cases was that it was bad in proportion to the amount of deafness present. One could not tell what the condition of the labyrinth was, whether there was a concussion lesion or an organic injury. He remembered one case distinctly where the old tuning-fork test pointed to middle-ear disease. He would like to know whether Dr. Milligan's case was tested by the modern method, using different tones.

Dr. Pritchard said he had always been interested in that subject, and had formed a very rough way of arriving at a prognosis. He referred especially to cases in which the test showed nerve deafness, and he concluded that if there was no improvement in three months there never would be any. If there was improvement by three months from the accident the condition might go on improving for some months further. He remembered a remarkable case in which this accident had occurred twice. The patient fell down on ice on each occasion, and there was an interval of eight years between. It was a case of nerve lesion, and he slowly improved on both occasions to quite good hearing. The second time the olfactory region was affected, and he not only had diminution of smell but perverted smell. Before recovery he said that one of the nastiest things he could be offered was a peach. In such cases he thought there was a small fracture and hæmorrhage, and when the hæmorrhage was absorbed the symptoms improved.

Mr. Lake expressed his gratitude to Dr. Milligan for bringing the case forward. One could not clearly express any rule as to

prognosis without having a series of cases, and as he had not an appointment in a general hospital he did not see a large number of cases, nor did he see them early. Therefore, his opinion on prognosis was not of much value. He wondered whether there was not a certain amount of mechanical influence. When a man fell from a height on to his head one would expect the fracture to go through the internal ear on account of the weight of the body being driven against the base of the skull, whereas, if the patient was thrown on the side of the head he was more likely to get fracture of the squamous bone than the petrous bone. There were cases alluded to by Dr. McBride in which there was concussion of the labyrinth; that, if severe enough, was never recovered from, nor was a fracture which went through the labyrinth. If detailed examinations of many cases were published there would be most useful data to work upon.

Dr. Bronner thought that in concussion of the ear the prognosis depended, to some extent, upon whether there had been pre-existing trouble. A small concussion of the ear, even without fracture, increased the deafness very much if the ear was already diseased. He believed that in some cases the prognosis depended very much on whether there was compensation or not. Sometimes there was quick recovery after compensation had been paid.

Mr. Sydney Scott said, in relation to injuries of the temporal bone, that some years ago a woman, aged forty-five, came into hospital saying water was running from her ear. On the previous night she had received a blow over the mastoid on the left side, and the following morning noticed a watery discharge from the left ear. She walked into hospital, was intelligent, and had no facial or other paralysis. There was a vertical laceration of the tympanic membrane anterior to the malleus, and almost clear fluid was dripping out of the external auditory meatus. He collected some of the fluid in a test-tube, about 10 c.cm. in as many minutes. It was slightly opalescent, with the chemical characters of cerebrospinal fluid, reducing Fehling's solution, and containing chlorides, but no blood or albumen. On looking into the literature at the time he found Erichsen quoted two similar cases at St. George's Hospital. The patient remained in hospital much against her will, because she felt so well. The fluid discharged for two days. One ounce was collected in the first twenty-four hours. She was deaf on admission in this year, but Mr. Scott had no note of the hearing when she left the hospital about a fortnight later. Cases in which hæmorrhage was the outstanding feature were interesting in connec-

tion with Rawling's work on "Fractures of the Base of the Skull." Rawling had shown that hæmorrhage from the external auditory meatus, if profuse and prolonged, came, not as a rule from the lateral sinus, as in Dr. Milligan's case, but from the middle meningeal artery, and that one might look upon the escape of the blood from the ear as beneficial rather than otherwise, and a condition to be encouraged instead of stopped by plugging, which might lead to the formation of an extra-dural hæmatoma compressing the brain. Judging from his own general hospital experience and post-mortem work Mr. Scott considered three possibilities as common in fractures of the temporal bone. The injury involved (1) the labyrinth, (2) it involved only the tegmen, or (3) the walls of the external meatus alone. Cases occurred in which these conditions were combined.

Dr. Milligan, in reply, expressed his obligations to those who had discussed the cases. Some of the patients were tested in the ordinary way, and some with Bezold's series of tuning forks. Dr. Pritchard's rule as to recovery in three months was a useful guide. In answer to Mr. Lake's suggestion he would bring forward at another meeting more detailed statements, and perhaps other members would do the same. In fact, it would not be amiss to have a symposium on the subject. In answer to Dr. Bronner's question concerning previous disease, he imagined that if there had been previous disease the prognosis would not be so good. He quite recognised that the question of compensation had much to do with prognosis. In reply to Dr. Scott concerning the middle meningeal artery, in his particular case bleeding was entirely from the lateral sinus, and there were great blood-clots on the brain. The result of his observations tended to show that the line of fissure did not pass through the internal ear, but by the side of the internal ear and through the middle ear, and that in those patients who recovered some hearing the labyrinth at the moment was concussed, and remained so for two or three months, and then gradually resumed its function. One often found that when the patient was sufficiently conscious to be properly examined there was practically no hearing at all, but in a few cases returned slowly. It could not be due to the healing of the middle ear that the hearing returned. A gradual absorption of blood extravasated into the internal ear or a slow recovery from severe concussion probably explained the return of audition in a certain number of cases.

Note on an Unusually Large Exostosis of the External Auditory Meatus.

By P. McBride.

The patient, now a woman aged thirty-three, was seen first eleven years ago. At that time she heard well with the right ear, but the canal was occupied by a large, hard tumour. She was seen again in May, 1904; the right ear was then deaf, the watch was not heard when pressed against the ear, and a low voice was only understood close to the ear. The meatus was filled with a large mass of osseous consistence; a probe could be passed in front, above and below it, but was stopped posteriorly; when withdrawn there was a disagreeable odour. There was also a history of attacks of inflammation.

On June 12 the patient was anæsthetised. An attempt was made to remove the growth by way of the meatus. With a gouge the smaller piece was removed. This required considerable force applied with a hammer. As, however, the whole tumour could not be got away in this way, the auricle was detached and the remainder of the mass removed. After detaching it from the bone a good deal of difficulty was experienced in extracting it. The meatus was found to be much enlarged and contained much cheesy, fœtid matter. It could not be clearly made out what was the condition of the membrane.

The process of healing was uneventful. When last seen, in October of 1904, the membrane was found to be replaced by a cicatrix. Hearing was much improved by the operation, and the patient was able to repeat a whisper at eighteen feet. Size of growth: 4·8 by 2·4 by 1 cm. the large piece; 2·6 by 1·4 cm. the small piece.

SPECIAL GENERAL MEETINGS.

The President, Mr. A. E. Cumberbatch, in the Chair.

Amalgamation with the Royal Society of Medicine.

At a special general meeting of the Society held on June 13, 1907, it was decided to join with other societies in the formation of the Royal Society of Medicine.

At a special general meeting of the Society held on July 5, 1907, the following resolutions were adopted:

1. "That in consequence of the decision of this Society at the Special Meeting on June 13 to join in the formation of the Royal Society of Medicine all the property of this Society shall be transferred to the Royal Society of Medicine, and the Treasurer is hereby authorised to transfer to the Royal Society of Medicine all sums of money in his possession standing in his name or to the credit of the Society at its bank at the date of dissolution of the Otological Society."
2. "That the Otological Society of the United Kingdom shall be discontinued and dissolved at a date convenient for the completion of the business."

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